Canada Alberta

FOREST RESOURCE DEVELOPMENT AGREEMENT
ENTENTE SUR LA MISE EN VALEUR DES RESSOURCES FORESTIERES

Canada Alberta

92-04048/

The Canada-Alberta Forest Resource Development Agreement is a subsidiary agreement of the Canada-Alberta Economic and Regional Development Agreement, which provides coordination and cooperation between the governments of Alberta and Canada in areas of Alberta's economic development.

The Canada-Alberta Forest Resource Development Agreement is funded equally by the governments of Canada and Alberta, from April 1, 1984, to March 31, 1989.

Its primary objectives are to ensure the long-term availability of timber supplies; to optimize timber uses; and to contribute to the growth and diversification of Alberta's economy.

The Agreement comprises three programs: Reforestation; Applied research, technology transfer and opportunity identification; and Public information, evaluation and administration. These programs are managed by a joint Directorate and are implemented by Forestry Canada and the Alberta Forest Service.

L'Entente Canada-Alberta sur la mise en valeur des ressources forestières est auxiliaire à l'Entente Canada-Alberta sur le développement économique et régional, qui vise à assurer la coordination et la coopération des deux gouvernements relativement au développement économique de l'Alberta.

L'Entente Canada-Alberta sur la mise en valeur des ressources forestières est financée à parts égales par les gouvernements du Canada et de l'Alberta, et a cours du 1er avril 1984 au 31 mars 1989.

Ses objectifs principaux sont assurer la disponibilité à long terme de réserves de bois; optimiser leur utilisation; et contribuer à la croissance et la diversification de l'économie de la province.

L'Entente comprend trois programmes: Reboisement; Recherche appliquée, transferts de connaissances techniques et relevé des occasions; et Information, évaluation et administration. Ces programmes sont gérés par un Bureau de direction conjoint, et mis en oeuvre par Forêts Canada et le Service forestier de l'Alberta.

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Market Acceptance

Forestry Department
Alberta Research Council[1]

1990

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Project # -84

DISCLAIMER

The study on which this report is based was funded in part under the Canada/Alberta Forest Resource Development Agreement.

The views, conclusions and recommendations are those of the authors. The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by Forestry Canada or the Alberta Forest Service.

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Summary

The purpose of this project is to enhance the marketability of Alberta forest products. This is done by maintaining and expanding a Forest Products Laboratory for materials evaluation and by participating on codes and standards committees to represent the interests of Alberta manufacturers, including monitoring international codes and standards.

Specifically during this year, the Forest Products Laboratory:

- Obtained Standards Council of Canada accreditation for testing panel products according to CSA 0325.
- Investigated the feasibility of obtaining Standards Council of Canada accreditation for certifying panel products according to CSA 0325.
- Maintained and expanded Standards Council of Canada Scope of Accreditation.
- Participated in the technical committees of CSA 0325, CSA 0437 and CSA 086 standards including European Code developments.
- Organized feedback from Alberta forest products industry representatives concerning ARC's involvement on codes and standards.

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Acknowledgements

The financial contribution to the Alberta Research Council's Forest Products Research and Development Program from the Alberta Forest Service (Alberta Forestry) and Forestry Canada through the Canada-Alberta Forest Resource Development Agreement is greatly appreciated.

1. OBJECTIVES

The objectives of this project as set out in Schedule "A" of the contract are as follows:

1. To obtain Standards Council of Canada accreditation for testing panel products according to CSA 0325.

2. To investigate the feasibility of obtaining Standards Council of Canada accreditation for certifying panel products according to CSA 0325.

3. To maintain Standards Council of Canada accreditation for the current scope of Accreditation.

4. To serve on technical subcommittees of standards that are governing the performance of Alberta forest products in existing and new end use applications.

5. To organize a workshop at which Alberta forest products industry representatives shall provide guidance concerning ARC's involvement on codes and standard committees.

2. INTRODUCTION

2.1 Market Acceptance

A main objective of the Forest Products Program at the Alberta Research Council is to expand the market acceptance of Alberta products. In many cases, this can be accomplished by third party evaluation of the products.

In 1982/83 the Alberta Research Council established a Forest Products Testing Laboratory. Initially, support was received from Alberta Energy and Natural Resources. The Canada-Alberta Forest Resource Development Agreement continued this support.

The personnel and facilities of the laboratory were built up quickly to include the capability to evaluate most engineered wood products. In 1983/84 the Testing Laboratory was accredited by the Materials Evaluation Section of Canada Mortgage and Housing Corporation (now the Canadian Construction Materials Centre). This recognition guaranteed acceptance of ARC test reports, reducing the time for a manufacturer to have a Building Material Evaluation Report issued for his product, allowing use in construction in Canada.

The testing facility was expanded and moved to its present location in the Alberta Research Council's Mill Woods facility in 1984/85. The capabilities were steadily increased to include common tests required for structural panels

(waferboard, oriented strandboard, and plywood) and building components (stress skin panels, glued laminated beams, wood I-beams, solid wood). In 1985/86 the Testing Laboratory was accredited by the Standards Council of Canada to carry out product testing according to CSA, ASTM and American Plywood Association Standards. The Standards Council of Canada is Canada's link to the International Standards Organization. This link is important for acceptance of test results in places like Europe.

Since its formation, the Alberta Research Council's Forest Products Testing Laboratory has emphasized the build up of testing capability and the acceptance of test data by national and international agencies.

2.2 Previous Year's Activity

Achievements during 1988/89 included the following:

- The Forest Products Laboratory participated in relevant committees and in all balloting on new standards.
- A pilot test of the new CSA 0325 standard was concluded. As a result of this work, two contracts were received in 1989/90 to conduct this testing for Alberta mills.
- A pilot test of the new CSA 0437.2 standard was completed. As a result of this work, three contracts were received in 1989/90 to conduct this testing for new resins available to Alberta producers.
- A submission to JAS/JIS for the Forest Products Laboratory to become a "Designated Foreign Testing Organization" was prepared. It has not been translated into Japanese.
- Initial contact was made with the British authorities concerning the procedures involved with waferboard/OSB acceptance in the United Kingdom.

3. ACTIVITIES IN 1989/90

3.1 Standards Council of Canada Accreditation for Testing Panel Products (CSA 0325)

When Canada's first OSB plant was built in Edson in 1983, there was no Canadian Standard for OSB. The mill gained acceptance for its product in Canada by testing it according to the existing waferboard standard, CSA 0188, and then

by showing equivalence to a product referenced by the National Building Code of Canada - Canadian Softwood Plywood. This was a complicated and time consuming process.

Just before this time, the American Plywood Association issued their "Performance Standards and Policies for APA Structural-Use-Panels". This was a change from the Product Standard, which set out rigid requirements on how panels were to be made. Instead it specified how the panels had to perform on specific spans for floors walls and roofs. The new Canadian set of Standards CSA 0325, were based on the APA experience. Test requirements are divided into three groups:

- physical properties
- bond durability
- panel stability (with wetting)

As part of ARC's 1988/89 program of work, a complete run of the CSA 0325 standard was made. In 1989/90 the problems identified by the original run were corrected and the standard, including all of the tests was included in a request to the Standards Council of Council to expand the ARC Scope of Accreditation. The ARC Forest Products Testing Laboratory was audited by a Standards Council of Canada team in May 1989. All of the CSA 0325 tests were demonstrated. Following the audit, the Standards Council included these tests in an expanded Scope of Accreditation. At the time of writing this report, the revised scope had not yet been published. Use of this standard is expected to increase rapidly. In 1989/90 ARC received contracts from two Alberta mills to evaluate their products using this standard.

3.2 Standards Council of Canada Accreditation for Certifying Panel Products (CSA 0325)

At the present time, most OSB and waferboard manufacturers in Canada have their product evaluated by CCMC. ARC commonly do the testing required and the company can submit ARC's report to CCMC for the evaluation. This situation has been under review with the move of the Materials Evaluation Section from Canada Mortgage and Housing Corporation to the Canadian Construction Materials Centre. It is likely that third party certification agencies will take over this activity, especially since on-going quality assurance testing is a requirement of CSA 0325.

The situation in Canada with respect to certification of panel products has been in constant change for the whole of 1989/90. The American Plywood Association certify the production of all three Alberta OSB mills. Their mark, however, is not accepted in Canada. APA applied to SCC for accreditation as a certification organization, withdrew the application in mid 1989, then resubmitted the application. The application is now being processed by the SCC. This normally takes 18 to 24 months.

In December 1989, Warnock Hersey Professional Services of Port Coquitlam, B.C. formally announced that they had received SCC accreditation as a certification organization for structural panel products. They are the first in Canada with the exception of COFI who only certify plywood panel products. Warnock Hersey and APA are not considering cooperation as an alternative. This means that Alberta mills, to sell panels in Canada and the United States, would have to either double their certification process or drop APA and go with Warnock Hersey. Neither option is acceptable to all three Alberta OSB producers.

At the start of 1989, discussions were held between ARC and the three Alberta OSB producers. As insurance that some means of certifying panel products for Canada be available at a reasonable price, ARC investigated the possibility of certifying panel products using CSA 0325. Discussions were initiated with APA to investigate the possibility of coordinating sampling and testing Alberta products to minimize duplication and keep cost at a minimum. As outlined earlier, the situation changed rapidly during the year and at this time, both APA and the Waferboard Association (TWA) have applications in process to obtain SCC accreditation as a certification organization. This eliminates the need for ARC to proceed with their application at the present time.

In this area, the following activities were undertaken in 1989/90:

- discussions with Alberta producers on alternative approaches for certification of products in Canada,
- discussion with SCC on requirements for an application for certification organization status,
- preparation of an application for accreditation by SCC as a certification organization,
- discussion with CCMC on acceptability of a certification mark while the application is in process, and
- monitoring changes in the situation.

The process of preparing and submitting an application to SCC is a lengthy one — SCC estimate an average time from submission to final acceptance at 18 to 24 months. ARC prepared an application (see Appendix I). Due to the applications of APA and TWA, the ARC one was not submitted. If APA do not finalize their accreditation it might be necessary for ARC to continue with their application.

3.3 Maintenance of SCC Scope of Accreditation

The Alberta Research Council Forest Products Testing Laboratory was the first laboratory accredited by the Standards Council of Canada to test forest

products. To maintain this accreditation, ARC must show a continuing ability to perform the tests in their scope of accreditation on an annual basis to monitor compliance. At each audit, requirements and recommendations are made by the audit team. The requirements must be met to maintain accreditation. This year the main requirements concerned updating SCC on organizational and personnel changes at ARC. All requirements have been met and the SCC accreditation is shown in Appendix B.

3.4 Participation on Technical Committees

Staff of the ARC Forest Products Program have membership on the following technical committees dealing with forest products:

- CSA Technical Committee on Waferboard and Strandboard (CAN 3-0437)
- CSA Subcommittee on Panel Products, Engineering Design in Wood-Limit States Design (CAN 3-086)
- CSA Technical Committee on Structural Sheathing (CAN 3-0325)

There was little activity by these committees in 1989/90. The only meeting was the CSA 086 subcommittee in September in Vancouver. The main topic of discussion was stress grades and engineering stresses for OSB. No decisions were made and the issue will be studied further. The agenda is included as Appendix C.

Although this was a slow year for these committees, continued membership is required to monitor proposed changes to the standards and make recommendations to represent the interests of Alberta manufacturers.

In previous years, the ARC Forest Products Program has been active in the area of foreign code approvals. This area was not as active in 1989/90 but there were some significant issues to report on with respect to Japanese and European approvals.

Last year, ARC Forest Products prepared an application for Foreign Testing Organization (FTO) status for the Japanese Ministry of Agriculture (JAS). The application was not translated into Japanese. An Alberta manufacturer qualified panels for shipment to Japan but cannot have the panels accepted until it increases the moisture content to approximately 8%. The mechanism to do this has not been completely debugged yet. Post press wetting is suggested as a research project for 1990/91. Panel moisture content is a limiting factor in Japanese approval and will probably also be a limiting factor in the new European standard.

In 1989, ARC approached the British Board of Agrement on test requirements for approval. ARC is proceeding to include British Test Methods in their Standards Council of Canada scope of accreditation. Little other activity was planned re European acceptance. The Eurocode 1992 process will determine test methods and material specification requirements. During the CEN standard writing process, there are many changes suggested in both test methods and requirements. The situation is too volatile to warrant a large effort to establish testing capability until final drafts are done. ARC Forest Products are monitoring the process and reviewing the draft documents as they are issued. A sample progress report on the Eurocode process is given in Appendix C. As the test methods and requirements become firmer a greater effort will be required to develop testing capability and determine implications to Alberta products.

3.5 Industry Input Re Codes and Standards

An objective of the ARC Forest Products Program is to represent the interests of Alberta forest products producers on standards committees. To accomplish this requires constant input from industry.

A wide range of forest products are manufactured in Alberta from large beams to sawn shakes. Standards cover the manufacture of many, but not all of these products. In the past, ARC have targeted standards being developed, or where likely changes would impact the Alberta industry. The question of competition between different products has always been a difficult one to handle. Instead of holding a workshop on codes and standards, it was thought to be more positive to hold one on one discussions with manufacturers to assess needs in their areas rather than mixing the sectors in one workshop. Generally it was felt that ARC was covering the required areas. One product to look at increased effort in 1990/91 is pine shakes and shingles.

4. SUMMARY OF ACHIEVEMENTS

1. The Forest Products Laboratory was accredited by SCC for testing panel products according to CSA 0325.

2. The Forest Products Laboratory prepared an application to SCC for accreditation as a certification organization (to certify panel products according to CSA 0325).

3. The Forest Products Laboratory maintained their SCC scope of accreditation.

4. The Forest Products Laboratory participated in all relevant technical committees and monitored European Code developments.

5. The Forest Products Program sought industry input on codes and standards as a basis for drawing up a proposal for work in 1990/91.

Appendix A

A Draft Copy of Alberta Research Council's
Application for Accreditation as a Certification Organization
for Wood Products in Accordance With
Standards Council of Canada Criteria and Procedures
for Accreditation of Certification

Application for Accreditation as a Certification Organization for Wood Products in Accordance with Standards Council of Canada Criteria and Procedures for Accreditation of Certification Organizations

Prepared by

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December 5, 1989

CAN-P-3C

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1.0

FOREWORD

1.1 HISTORY

The Canadian forest products industry has experienced a dramatic period of growth in the last decade. The province of Alberta has been part of this increased productivity. The evolution of the Alberta Research Council - Forestry Department was a direct result of this rapid expansion.

The forest industry is a major employer in Alberta with annual production totals exceeding $1 billion. Billions of dollars worth of capital construction presently underway or on the drawing board attest to the continued growth within the industry. The main force of expansion is concentrated in the harvesting of hardwoods, particularly aspen.

Alberta's hardwood resource is primarily small in diameter, therefore little of it is suitable for use as dimensional lumber. The research and development challenge was to upgrade this small diameter material to fibre board, engineered wood composites, structural panel products and building components which could compete in the continental market. Hence, new technologies were found, developed and transferred to industry to accomplish this goal.

1.2 SCOPE

The scope and activity of the Forest Products Program has expanded in response to industry, and its reputation has grown steadily. It is keeping pace with industrial expansion.

1.3 FOREST PRODUCTS TESTING PROGRAM

The Forest Products Testing Laboratory was established in 1982/83. A number of strategic studies were initiated and several research and development programs were begun, including the design and construction of a prototype for machine stress rating full size panels.

1.4 C.M.H.C. ACCREDITATION

In 1983/84 the Testing Laboratory was accredited by Canada Mortgage and Housing Corporation (now the Canadian Construction Materials Centre). The laboratory carries out testing for certification tests for new mills and also performs a wide range of tests on new panel products, materials, binders, etc.

1.5 EXPANSION

The testing facility was expanded and moved to its new location as part of the Alberta Research Council complex in 1984/85. Further expansion took place the following years, including the capability of testing areas of performance and full size production evaluation. The laboratory is uniquely equipped to handle testing of engineered wood composite products produced by the forest industry, such as structural panels (waferboard, oriented stranboard, plywood) and building components (stress skin panels, glue laminated beams, wooden I beams) that are fabricated from composites.

The laboratory provides contract services to private industry.

1.6 S.C.C. ACCREDITATION OF TESTING LABORATORY

The testing Laboratory has been accredited by the Standards Council of Canada to carry out product and performance testing according to C.S.A., A.S.T.M. And American Plywood Association Standards. The test capabilities and areas of testing are listed in Appendix 4.13.

1.7 RESPONSE TO INDUSTRY DEMANDS

Prompt response to industry needs is ensured by having a well administered test program, properly maintained and up-to-date equipment, plus a continuing program for upgrading facilities, equipment, instrumentation and personnel.

1.8 NEED FOR CERTIFICATION

There is an increasing demand by the public, industry, provincial, federal and foreign governments to ensure the safety and performance of building products. This demand can best be satisfied by a third party monitoring and certification system. Certification marks placed on the products controlled and monitored by a nationally accredited certification organization can satisfy these requirements.

A number of mills in Alberta, selling their products throughout Canada and exporting to other countries have requested that the Forestry Department certify certain of their products. The department thereby feels obligated to respond to this certification requirement.

Provincial and National Building codes require that most building products meet national standards. The authorities having jurisdiction to enforce the codes will accept the certification mark or logo of an accredited organization as evidence that the product is acceptable. Some foreign countries also require that imported wood products be certified to acceptable standards. Therefore the Alberta Research

Council - Forest Products Laboratory in response to industry, government and export demands seeks accreditation in the field of Wood Panel Products.

The Forest Products Laboratory feels that it has the administrative, financial, technical and testing capability, and the facilities to meet the requirements of the national accreditation program. Accreditation will assist the Forest Products Laboratory and industry to meet its certification goals while working within the framework of the National Standards System of Canada.

The application follows the criteria set out in CAN-P-3C. If certification is granted the Forest Products Laboratory is willing and able to respond to any application for certification.

2.0

RESPONSE TO CRITERION

2.1 9.2.1.1 ***CRITERION 1 The organization shall:***

a) have the ability to develop and operate a continuing activity of certification programs to certify compliance with standards or other recognized documents which may be identified in specifically assigned subject areas;

a) The Alberta Research Council is a crown corporation of the Province of Alberta offering a diversified range of scientific, engineering and technological research and testing capabilities in a number of fields, one of which is forestry.

The Forest Products Program concentrates on engineered wood composites made from Alberta aspen.

The Forestry Department has been reorganized to accommodate the infusion of a certification program. The scope of the program covers wood-based panel products, bonded with a waterproof and boilproof binder. Certification is based on the tests and criteria found in CSA 0325 series of standards pertaining to "Construction Sheathing".

The certification of the manufactured product is to assist industry in marketing the product at home and abroad. It also assures the regulatory authorities that a third party monitoring system is in place.

The submission follows the criteria set out in CAN-P-3C and demonstrates that the Forest Products Laboratory has the capability and resources to operate a certification program.

The field for which certification is applied for is Manufactured Wood Products. <u>The program is wood based construction sheathing panels.</u>

b) have the capability and procedures for ensuring that representatives of concerned interests are involved in policy making governing the development and operation of each certification program and in the monitoring of the work of such programs.

b) The matrix and terms of reference for the Policy Advisory Board and the Technical Advisory Council provide assurance that concerned interests are well represented. Members of the Policy Board provide guidance to senior staff on policy matters. The Technical Advisory Council members provides the technical monitoring advice.

9.2.1.1.1 ***Provide an organization chart and explain the responsibility and reporting relationship of the elements of the organization.***

Figure 1. (Appendix 4.1) is an organizational chart showing the corporate profile to the department level.

Figure 2 (Appendix 4.2) is an organizational chart showing the forestry Department organization. The Forestry Department is divided into a number of sections, each having its own manager reporting to the Department Head. The Forest Products Laboratory section is comprised of two units, the testing unit and the certification unit (see Figure 3 Appendix 4.3). A supervisor responsible for the day to day operation of the laboratory programs is involved in testing and certification.

The manager of the Laboratory, Robert Wellwood, is responsible for the certification and testing operations. The Laboratory staff report to him through the supervisors.

There are also two advisory bodies who report directly to the Laboratory manager. The Technical Advisory Council provides the technical advice and the Policy Advisory Board provides input on procedural and program matters. The terms of reference for these two bodies is found in Appendices 4.4 - 4.5).

The certification organization operates as an independent unit within the administrative framework of the Forestry Department. The organization utilizes the support systems of the department. The testing unit supplies all the testing data for the certification process. The two units merge at the management level. This organizational structure ensures that both units operate in an economical, efficient and cooperative manner.

9.2.1.1.2 ***Identify certification programs managed by the organization which have received national acceptance and provide any other evidence as to demonstrate status as a certification organization.***

The present certification program managed by the organization is limited in scope since it is confined to only one area of certification - namely wood panel products. The standards to which testing and certification must take place, CAN/CSA-0325.0-88 and CAN/CSA-0325.1-88 were first published in March 1988, therefore the whole program using Canadian standards is relatively new. The National Building code will reference the above two standards in the 1990 edition and it is assumed that this will trigger an increased interest in wood panel products certification.

The American Plywood Association (APA) published its standard for Structural-Use Panels in 1980. Panel Products were tested to the requirements found in the APA Standard prior to the development and acceptance of the Canadian Standards.

The Canada Mortgage and Housing Corporation (now known as Canadian Construction Materials Centre) has accepted the certification tests carried out by the Forest Products Laboratory. The Laboratory also performed waveboard experiments using Alberta aspen and Australian pine for a client in Australia.

There is a program in place aimed at assisting exports of Canadian waferboard/OSB to Japan. A visit was made to Japanese testing laboratories and a submission has been prepared to have the Forest Products Laboratory cited as a "designated foreign testing body" to Japan. At the present time the recognition is in the testing field, the next step will be the acceptance of the certification mark.

There is a close liaison between APA and the Laboratory to ensure the uninterrupted flow of panel products to the United States.

The above examples indicate the wide acceptance of the certification and testing programs operated by the Forest Products Laboratory.

9.2.1.1.3 ***Describe the manner in which the organization will obtain financial support to ensure its ability to manage and maintain certification programs.***

The Forest Products Laboratory is a not-for-profit organization. The program is operated on a cost recovery basis. Established fee schedules are used to ensure that all clients are treated equally. These fee schedules are reviewed annually since they form part of the annual program review process.

The fee schedules are divided into two categories and take into account the cost of the following services:

a. **Administration**

The cost of reviewing the application and conducting the initial inspection. This is a non refundable fee.

b. **Certification Services Cost**

The fee schedule takes into account all the costs of operating a certification program, which include the following:

(1) Liability Insurance

(2) Administrative overhead costs for management of the program including typing, filing, record keeping and storage.

(3) Random sampling and the associated tests.

(4) Designing and producing the labels and stamps.

(5) Follow-up plant inspections.

(6) Special inspections.

(7) Investigation of deviations and product failures.

(8) Proportionate staff wages.

The certification policy also dictates that clients are informed of the fee schedules at the inquiry stage of the certification process.

The fees are paid to the Alberta Research Council and then credited, through the accounting and coding system, to the Laboratory.

9.2.1.1.4 *The term "concerned interests" in Criterion 1(b) will normally comprise industry, regulatory authorities, users and other interests.*

9.2.1.1.5 *If the organization does not have all concerned interests available from within its own organizational structure it shall be responsible for assembling a committee of such interests as requisite.*

The terms of reference and matrix for the Policy Board and Technical Advisory Council provide for broad based geographical and technical representation.

The Policy Board members are selected from industry and groups interested in the manufacturing process and the administration of a certification program. The Technical Advisory Council members are selected for their technical expertise and/or their regulatory authority.

The terms of reference and matrix are attached as Appendices 4.4 - 4.5.

9.2.1.1.6 *Provide a copy of documented procedures for implementing Criterion 1 (b) including, without being exclusive, a development of the method by which "concerned interests" are involved in the preparation of other recognized documents used in the performance of certification.*

The Forest Products Laboratory does not intend to use "other recognized documents" in administering the certification program. It intends to use only the tests and procedures which are mandated and described in established and accepted standards.

This certification program is based on the requirements found in CAN-CSA 0325.0-88 and CSA 0325.1. However, the terms of reference for the Technical Advisory Council provide for input and approval of other recognized documents if the need should arise.

2.2 9.2.1.2 *CRITERION 2. The organization shall have a staff knowledgeable in certification, testing and quality assurance including related matters of philosophy, policies and techniques, shall have appropriate administrative facilities for the operation of certification programs.*

9.2.1.2.1 *Identify the staff members who will be directly involved in the operation of certification programs, the functions they will perform within the organization and the percentage of their time that will be devoted to these programs.*

Figures 1, 2 and 3 (Appendices 4.1 - 4.3) provide the organizational charts showing the reporting relationships. The Certification Program falls within the mandate of the Forestry Department. The Forest Products Laboratory is a section of the department and is directly responsible for the certification and testing programs.

Personnel

a) Peter Williams, Head of the Forestry Department reports to the Vice-President - Natural Resources. Mr. Williams is responsible for the management of a department complement of 57 people engaged in research, development and testing service activities in the field of industrial technologies. Part of this management responsibility is to ensure that the support services, funding and staff requirements are available to the manger of the certification program. Resume is found in Appendix 4.6.

b) Lars Bach, Ph.D., P.Eng., is a Wood Products Specialist, who works in close liaison with the manager of the certification programs and is available to provide advice to the manager of the certification program. Resume is found in Appendix 4.7

c) Robert Wellwood, P.Eng., is the Manager of the Forest Products Laboratory. The Laboratory is divided into two units, certification and testing. The manager is responsible to ensure that the certification and testing programs are operated within the established guidelines. The percentage of time devoted to the management of the program will increase as the program expands, current participation will vary from 10 to 25 percent. The detailed job description is attached to the resume. Resume is found in Appendix 4.8

d) Wood Products Engineer - Vacant - is presently advertised. The duties of the incumbent include supervision of the certification program, making assessment of applicant mills, inspecting accredited mills, checking quality control, providing technical input for the certification program and performing other related duties. the percentage of time spent in certification is 50%. This percentage may increase as the program expands. Job Description for the Wood Products Engineer is found in Appendix 4.9

e) Kelly Allen - Senior Technologist - Lab Supervisor. Resume and duties are found in Appendix 4.10. The incumbent is responsible for the supervision of the day to day operations of the Testing Laboratory. Calibrates the testing equipment, checks the testing data of two technicians and is responsible for the quality assurance program. The time spent on the certification program may vary from 10 to 15 per cent.

f) Leo Regnier - Technologist. Resume attached as Appendix 4.11. The incumbent is responsible for qualification testing. He will spend approximately 10% of time on certification work. This percentage may increase and vary from time to time since he may be called upon to perform mill inspections as an alternate to the Wood Products Engineer.

g) Doug Coolidge and Dave Bilyk are technicians responsible for carrying out physical testing within the laboratory setting. The test results are checked by the senior technologist. Other duties include but are not limited to:

a) Routine mechanical testing on a variety of wood products,
b) sample preparation.
c) data entry and handling on P.C. spread sheet, and
d) clean up and general maintenance.

The technicians report to and are supervised by a technologist. Percentage of time spent on certification work is 50%. This may increase as the program expands.

9.2.1.2.2 ***Provide details of relevant experience and qualifications if the senior members of the staff who will be involved in the management of the certification programs.***

Senior Staff Qualifications

Resumes of senior staff detailing experience and qualifications are attached as Appendices 6 - 11.

P.C. Williams - Head, Forestry Department - Appendix 4.6

Lars Bach - Wood Products Specialist - Appendix 4.7

Robert Wellwood - Manager, Forest Products Laboratory - Appendix 4.8

Vacant - Wood Products Engineer - Appendix 4.9

Kelly Allen - Senior Technologist - Appendix 4.10

Leo Regnier - Technologist - Appendix 4.11

9.2.1.2.3 ***Describe the administrative facilities available for the operation of certification programs, including the ability to maintain and process records, reports, and other relevant data.***

The Forest Products Laboratory has the administrative facilities and knowledge to maintain and process records, reports and other relevant data. The filing system follows the system accepted by the Alberta Research Council. All records and computer discs are stored in secured filing cabinets. Only authorized personnel have access to the files.

The general information files on certification contain the information kits, various forms used by the C.O. and general information relating to certification.

Each applicant or client is issued a block project number. All information related to the client is filed in this block known as the activity file. The activity file is subdivided into sub-activity files. Each sub-activity file contains information relating to one subject. The following is an example.

1. Project Name John Doe and Company
2. Project Activity # 406000
3. Project Sub-Activity #
   - a) general correspondence 01
   - b) application 02
   - c) legal agreement 03
   - d) initial assessment 04
   - e) on going inspections 05
   - f) test results 06
   - g) appeals 07
   - h) invoices 08

The testing laboratory has a limited duplicate filing system. Testing results and inspection reports are stored in the main filing area as well as in the laboratory area. The two areas are separated by a fire wall.

Testing data are recorded on hard sheets, signed, dated and stored. The test data are also recorded on computer discs and filed. All of the data are filed chronologically and by project in secured areas.

Technologists keep individual log books to record the testing done, but not the actual test results.

9.2.1.2.4 ***Demonstrate that sufficient knowledge of the tests involved is inherent within the certification organization, on an on-going basis, to enable the organization to exercise good judgement in deciding whether to accept or reject test results and to recommend changes required in testing procedures and techniques to achieve the intent of the standard(s) and other recognized documents involved. (See paragraph 9.3.4).***

The Forest Products Laboratory does not use contract laboratories for testing purposes. It is self sufficient in this area.

The professional responsible for prescribed testing is responsible for the appropriate quality control. Testing is performed to approved specifications.

Quality control procedures are reviewed at weekly staff meetings. Professionals prepare the procedures and the manager has the ultimate responsibility for technical matters.

All tests are signed by the technologists who performed the testing. These records are checked by the professional responsible. He is also responsible to ensure that the technologist understands and follows written procedures. All calculations are reviewed by two professionals.

Some comparisons with other laboratories are done by round robin testing. Results of the round robin tests are kept in the laboratory files for reference. The professional in charge of the testing is responsible to ensure that calibration and accuracy is maintained.

If an error is detected, it is discussed with all levels responsible (from testing through calculations and checking) to ensure that procedures are correct and that the error will not be repeated.

The ARC maintains an extensive library of reference material. The library computer is connected to the University of Alberta library computer which ensures that the laboratory staff have access to all the material located in the university libraries.

A well maintained calibration program is in place. Calibration information is recorded in a calibration log book. The Calibration Log Book records serial number, date calibrated and the name of the company and individual performing the calibrations. An example of a calibration certificate is attached as Appendix 4.12.

2.3 9.2.1.3 ***CRITERION 3. The organization shall have technical expertise and professional competence concerning the subject areas for which accreditation is sought.***

9.2.1.3.1 ***Describe the technical expertise and professional competence of the organization's certification staff in the certification staff subject area for which accreditation is sought.***

The certification staff are capable of not only monitoring the Certification Program, but also understand the whole manufacturing process. They have all worked in the adjacent panel laboratory, which has a panel board manufacturing capability. Staff qualifications are identified in the attached resumes found in appendices 4.6 - 4.11.

9.2.1.3.2 ***Describe the staff training programs by which the organization develops and maintains the necessary technical expertise and professional competence in these subject areas. (See also paragraph 9.3.1 (b), (d) and (e)).***

The Alberta Research council is committed through stated policy to assist staff with career development. This goal is accomplished by:

1. Identifying training needs during annual assessments.
2. Funding work-related courses taken after work hours, if the participant passes the course requirements. (Courses are usually taken at the University of Alberta or the Northern Alberta Institute of Technology).
3. Allowing staff to attend relevant seminars of two or three days duration.
4. Providing a well-equipped library located in the Research Centre.
5. Providing all the necessary work related codes and standards.
6. Encouraging exchange of information between CO, TO, and Research and Development staff.

The Forestry Department encourages senior and middle management staff to participate in standards writing committee work, both nationally and internationally. The Forest Products Laboratory has written to CSA requesting membership on the committees responsible for the CSA 0325 series. Forestry Department staff presently serving on standards writing committees are:

Mr. Peter Williams, CSA Steering Committee on Forest Products

Dr. Lars Bach, CSA 0437, CSA 0325, CSA 086

2.4 9.2.1.4 ***CRITERION 4. The organization:***

a) shall have, or shall have access to, test facilities and staff competent to perform examinations and tests required by the standards or other recognized documents in the subject areas for which accreditation is sought;

a) The Forestry Department maintains and operates a Standards Council of Canada approved testing laboratory. The testing facilities are spacious, the equipment is well maintained and regularly calibrated, quality control and test procedures are reviewed on a regular basis, and an extensive library of standards, codes and reference material is readily available.

The laboratory is listed as registrant No. 19 in the Directory of Accredited Testing Organization CAN-P-1550-1988. The directory lists the tests which the laboratory is capable of performing. In addition to the listed tests the Forestry Products Testing Laboratory has applied for accreditation to perform tests as required by CSA 437.2 and CAN-CSA-0325.0-88 (April 1988). Present testing capabilities listed in Appendix 4.13. The lab audit will take place May 30/89.

The direction provided to laboratory and certification staff merges at the senior management level. The administrative responsibility for the laboratory and the certification program is vested in the same manager. This assures constant interface between the accredited T.O. and the C.O. The C.O. staff also have access to those T.O. test results which are related to the certification program.

b) shall agree to accept the responsibility for the adequacy of test results.

b) The Alberta Research Council is a Crown Corporation of the Alberta Government. The Forestry Department is a department within that corporate structure. The department operates and maintains its own laboratory and does not use contract laboratories. Full responsibility for the adequacy of test results is accepted by the Forest products Laboratory. A copy of the testing laboratory layout and the quality control procedures manual are attached as Appendix 4.14.

9.2.1.4.1. ***Identify those testing organizations which will be used to perform the examination and tests required.***

The Forest Products Laboratory does not intend to use any contract laboratories. It is self sufficient in this area.

9.2.1.4.2. ***Describe the method by which the certification organization determines that the test facilities and test results are adequate and that the testing staff is competent to perform the tests and examinations required. Demonstrate that the identifies testing organizations have the ability to comply with the appropriate portions of the Standards Council "Criteria and Procedures for Accreditation of Testing Organization"*** (CAN-P-4)

The in house testing capabilities and the quality control monitoring procedures are described in 9.2.1.2.4.

9.2.1.4.3. ***Provide evidence that the test facilities and associated staff will be available on a continuing basis. (See paragraph 9.3.4).***

The Alberta Research Council through policy and program statements has demonstrated its commitment to operate a certification program, part of this commitment is to provide in house testing capabilities on a continuing basis.

2.5 9.2.1.5 *CRITERION 5. The organization shall have well-developed and acceptable procedures for:*

a) initiation and application of certification programs, which include the use of a duly registered certification mark, and be prepared to make these procedures available to the public;

Initiation and Application for Certification

The Forest Products Laboratory follows its policy procedures whenever it receives a request from a company wishing to be certified. The company is sent an information package explaining the certification program. Included in the package is an application form. Upon receipt of the application the Forest Products Laboratory establishes a file for the client and begins the documentation and certification process. Detailed steps to certification; the application forms; flow chart and the initial assessment form are found in Appendices 4.15 - 4.18.

The certification mark is registered as required under law and is controlled by policies outlined in the legal agreement and the policy procedures manual (for the use and control of the certification mark see Appendix 4.19.

b) monitoring certification programs for continuing compliance with applicable standards or other recognized documents;

Monitoring the Program

The Forest Products Laboratory reviews its certification programs on an ongoing basis. It conducts quality control inspections to ensure that the client is adhering to the certification policies and procedures listed in the legal agreement. Inspections are carried out on an unannounced basis at least every 5 weeks, and more often if required. Product samples are taken to the laboratory for testing. The inspectors' reports and sample test results provide for detection of problems and deficiencies involving compliance to the certification program requirements. These violations are automatically reported to management for further action as described in (d). The inspection forms and the monitoring procedures are found in Appendices 4.20 - 4.21.

c) providing legal agreements with applicants, to control the use of certification marks;

Legal Agreement

A sample copy of the legal agreement is found in Appendix 4.22.

d) initiating on a timely basis corrective action following the identification of defective products or misuse of certification marks;

Deficiency Corrections

In the event that an inspector finds deficiencies in the quality control programs, misuse of the certification mark, or violations of the requirements in the legal agreement, the inspector will notify the C.O. management who will request that remedial action be taken by the plant. The time frames for corrective action will be spelled out in the letter. Failure by the manufacturer to take action within the specified time limits or continued noncompliance, will result in the manufacturer being delisted.

e) consideration and settlement of appeals.

Appeals Procedure

Clients are advised of the various appeal and complaint procedures that are available to them. These procedures are given in Appendix 4.23.

9.2.1.5.1 ***Provide copies of procedures which demonstrate compliance with this criterion.***

The procedures for criterion 5 are given in Appendices 4.15 - 4.23.

9.2.1.5.2 ***Confirm willingness to make these procedures available to the public.***

Procedures listed in response to 9.2.1.5.1 will be made available to the public on a request basis provided that confidentiality and proprietary rights are not violated or compromised.

2.6 9.2.1.6 ***CRITERION 6. The organization shall be capable of responding nationally to requests for certification whenever that capability is required to satisfy the national need.***

9.2.1.6.1 ***Identify the characteristics of the organization which demonstrate that it has the capability of accepting and processing applications for certification from any part of Canada.***

The Forest Products Laboratory has the capability to respond to any application received from any part of Canada. The certification program for panel products is based on standards that are either identified as National Standards of Canada or are pending as National Standards and are therefore national in scope. (i.e. national standard pending CSA0325.2)

The policy of the Forest Products Laboratory is that participation in the certification program is open to any company, regardless of size or geographic location, provided the company meets the established requirements.

The program is administered from the Forest Products Laboratory located in Edmonton. However, Edmonton has travel facilities which make it convenient and easy to travel either south, north, east or west. Therefore a manufacturer could be serviced anywhere in Canada.

9.2.1.6.2 ***Confirm the capability of providing certification services to Canadian regulatory authorities, manufacturers and other interested Canadian parties in either of Canada's two official languages as requested.***

The Alberta Research Council has some staff who are bilingual, including several technical people who are able to translate documents into both official languages. To date no requests or correspondence written in French relating to certification have been received by the Laboratory. Therefore, the need to hire bilingual staff has not been a requirement. However, should a bilingual capability be required, the Forest Products Laboratory would incorporate that requirement into its staffing policies.

9.2.1.6.3 ***Confirm willingness, when required in response to a "national need", to assist Canadian manufacturers producing for markets outside of Canada by co-operating with certification organizations and regulatory or inspection authorities in countries other than Canada.***

The Forest Products Laboratory is willing to assist manufacturers producing for markets outside of Canada by co-operating with certification organizations and regulatory or inspection authorities in countries other than Canada. The Laboratory has developed a liaison

with the American Plywood Association. This liaison is of particular significance since the APA is certifying products produced in Canada for export to the United States.

The Forestry Department has membership on several international standards committees and subcommittees to ensure that the Canadian viewpoints are taken into consideration. It also has members on CSA standards writing committees which produce standards directly related to manufacturing panel products.

This involvement in committee work further demonstrates the willingness of the organization in promoting the National Standards System thereby indirectly assisting Canadian manufacturers.

9.2.1.6.4 ***Confirm willingness to respond to requests from foreign manufacturers for certification of their products for sale in Canada.***

Foreign manufacturers may participate in the certification program provided the requirements of the program are met.

The testing procedures for the foreign manufactured products would be the same as for those stipulated for Canadian manufactures products. Testing of samples would be carried out in the Forest Products Testing Laboratories using the Canadian referenced standards.

The Forest Products Laboratory reaffirms its willingness to co-operate with foreign manufacturers wishing to sell certified products in Canada.

2.7 9.2.1.7 ***CRITERION 7. The organization shall be prepared to give full consideration to any application for certification in compliance with standards or other recognized documents which may be identified in the subject areas for which accreditation is sought.***

9.2.1.7.1 ***confirm willingness to comply with this criterion recognizing the following requirements:***

a) an accredited certification organization will not discriminate in the acceptance of certification projects within the subject areas for which accreditation has been granted without justifiable cause - provided that there is no question that these projects are within the assigned subject areas;

The Forestry Department is willing to consider any application for certification in its accredited area, from any company operating in Canada, or marketing products in Canada. The company must meet and maintain the established certification criteria set out by the certification organization. The procedure detailed in this application in response to criterion 5, a-e, will apply.

Each application will be considered on its own merit. The department does not, and will not discriminate against any company in considering acceptance of submitted application.

b) an accredited certification organization will undertake to maintain the necessary level of expertise and facilities which comprise the capability to respond to applications for certification of the subject areas for which accreditation has been granted;

Organizational charts of the Forestry Department were supplied in response to criterions 1 and 2 and are noted in figures 1, 2, and 3. The job descriptions follow the charts. Staff vacancies are filled by hiring qualified employees. Staff training is described in response to 9.2.1.3.2.

The Department is committed to maintaining the necessary technical and professional competence in the subject areas for which it is accredited.

The facilities housing the Forestry Department are owned and operated by the Alberta Research Council. They are designed to adequately meet the needs of the certification organization.

c) if an application for certification is rejected the certification organization will inform the applicant in writing of the rejection, stating the reasons for the rejection, and advising that the decision may be appealed using the certification organization's appeal procedure. When an applicant uses this appeal procedure and the

rejection is confirmed by top management of the certification organization, the applicant is to be advised that the rejection may then be appealed to the Standards Council of Canada. A copy of the letter confirming the rejection by top management is to be provided to the Standards Council of Canada.

The appeals and complaints procedure developed in response to criterion 5 confirms that all applicant appeals and complaints will be answered in writing.

The applicant will be informed that a three-level procedure exists and that the third level is the Standards Council of Canada. Full details can be found in Appendix 4.23.

In case of rejection, a copy of the letter informing the applicant of the decision will be sent to the Standards Council of Canada.

2.8 9.2.1.8 ***CRITERION 8. The organization shall not be dependent upon any individual manufacturer, supplier or purchaser and shall be free from any other significant conflict of interest.***

9.2.1.8.1 ***Demonstrate compliance by reference to policy, organization and procedural documents.***

It is the policy of the Forest Products Laboratory to be independent of any individual manufacturer and to provide a certification service, within its accredited area, to all applicants and clients on an equal and unbiased basis. This is demonstrated in its willingness to review all applications, respond to a client's complaints and appeals and apply the accepted policies without discrimination. This practice is reaffirmed by the details provided in response to criterion 5 and 7 and their accompanying appendices.

9.2.1.8.2 ***The term "significant conflict of interest" in this criterion has to do with the capability of the certification organization to maintain an unbiased objectivity. In this context the term includes the possibility of a financial, legal or other connection between the certifying organization and those for whom the certification organization is providing a certification service and the influence of the profit motive.***

The Forest Products Laboratory is part of the Alberta Research Council, and as such is independent of any manufacturer or marketing agency. The policy of the Forest Products Laboratory is to operate a certification program through its own resources, on an impartial basis. This is verified by the organizational charts (see figures 1, 2 and 3) its policy procedures and financing arrangements as detailed in 9.2.1.1.3.

The Policy Advisory Board and the Technical Advisory Council make recommendations on policy or technical matters. However, the final decision is made by Forest Products Laboratory management. The Policy Advisory Board and membership selection is structured so as to prevent any organization being represented by more than one member per mill. The Technical Advisory Council membership is composed of regulatory authorities, staff members and others not involved in the manufacturing or marketing process.

The certification organization is a nonprofit organization and has no legal connection or partnership with any business. Clients are billed for services rendered. Fees are based on a cost recovery policy including overhead.

The certification organization operates its program without favour or discrimination.

2.9 9.2.1.9 ***CRITERION 9.*** ***The organization shall allow examination of test data and other information pertinent to the determination of compliance with applicable standards or other recognized documents. Such an examination may be carried out by the Standards Council of Canada and by government inspection authorities having jurisdiction where the authorities recognize the certification provided by the organization, or by the specific client for whom the work is being performed. Examination by other parties is a matter of negotiation between the client and the other parties. Proprietary information not required to determine compliance with the standard need not be made available.***

The policy of the Forestry Department is to maintain confidentiality of all information stored in its filing systems. The security policy and practice does not permit unaccompanied visitors into operational areas.

Government authorities having jurisdiction to enforce codes and standards may make arrangements to examine test data and other information pertinent to their investigation. The same right will be extended to Standards Council of Canada staff, auditing the certification program.

9.2.1.9.1 ***Confirm willingness to comply with this criterion.***

The Forest Products Laboratory confirms its willingness to comply with criterion 9.

2.10 9.2.1.10 ***CRITERION 10. The organization shall maintain and make publicly available lists of certification granted to applicable standards or other recognized documents.***

9.2.1.10.1 ***Confirm willingness to comply with this criterion.***

The Forest Products Laboratory confirms its willingness to publish, maintain and make publicly available lists of certifications granted to applicable standards or other recognized documents. The certification organization utilizes the facilities and services of the Alberta Research Council Information Department to assist in accomplishing this requirement.

9.2.1.10.2 ***Provide an example of such a list and describe the procedure by which it is maintained and distributed.***

The Alberta Research Council publishes a newsletter entitled R&D, on a bi-monthly basis. The newsletter informs governments and the public of new developments related to ARC programs. It is distributed free of charge to a controlled circulation list. The list contains the names of government staff, industries and any other interested parties. Names may be added to the circulation list by contacting the information department.

The certification organization uses this information vehicle as one avenue of informing governments, industries and other interested parties of its listed products and certification activities.

The organization will also publish an information report listing certified products. This information report will be distributed to the members of the Policy Advisory Board, Technical Advisory Council, regulatory bodies and industries involved in the program. It will also be made available to the public upon request. The product list will also be placed on a computer disc, and thereby can easily be up dated on a regular basis. Sample copy of the R&D newsletter is attached as Appendix 4.24.

3.0

9.3 REQUIREMENTS

9.3.1 *A certification organization accepting accreditation agrees to carry on its certification practices, within the subject area for which it has been accredited, in accordance and full compliance with this document and shall undertake to co-operate with and support the National Standards System of Canada, recognizing that in certain cases it may be necessary to negotiate appropriate financial adjustments for the purpose. Typically, this co-operation and support would include:*

a) participating in consultations from time to time to enhance the National Standards System;

b) maintaining knowledge of:

i) standards in the field for which accreditation has been granted,

ii) international certification programs,

iii) those certification programs of other countries or regions, which may be relevant to the development of the National System;

c) agreeing to participate in the development of international certification programs;

d) agreeing to participate in research and development work required to support the development of the National Standards System;

e) agreeing to participate in the development of standards in the subject areas for which the organization has been accredited to undertake certification programs;

f) agreeing to follow routines established for achieving consistency in the development, interpretation, dissemination and application of technical requirements related to its certification programs in co-operation with the applicable standards-writing organization(s) in regard to those subject areas of its accreditation.

9.3.2 *In accepting accredited status the organization shall recognize that the Standards Council of Canada may be required to negotiate in establishing a suitable time for developing certification programs, particularly where time is critical to the nation's interest.*

9.3.3 *An accredited organization shall submit any advertising or promotional material related to the accredited status of the organization to the Standards Council of Canada for approval before publication.*

9.3.4 *It is expected that, in order to maintain competence, a certification organization shall be largely self-sufficient (both in staff and facilities) to perform the required examinations and test in the subject areas for which accreditation is sought. However, it is also realized that, in some cases, it may be necessary for the certification organization to obtain these services from outside sources such as university or government facilities or by the use of manufacturer's facilities.*

9.3.5 *As noted in 9.3.4 (above) it may be appropriate for certain activities in the process of certification such as testing, inspection of products, review of facilities and the like, to be carried out by other organizations. The use of such services of such other organizations shall not result in the delegation by the accredited certification organization of the ultimate responsibility for certification.*

9.3.6 *In any subject area, to the extent that regulatory authorities require certification of compliance with a standard or standards, an accredited certification organization in the subject area shall agree to use the standards that have been accepted by the regulatory authorities.*

9.3.7 *An accredited certification organization shall have a system for making available to clients and prospective clients upon request, current information on all of the requirements of their certification programs to which products will be subjected. This information shall include, inter alia, all appropriate other recognized documents, in whatever form they are available.*

9.3.8 *It is the policy of the Council to act in harmony with provincial, territorial and federal regulatory authorities and, therefore, all applicant certification organizations shall establish or have in place and, when accredited, maintain a system of active and direct liaison with appropriate Canadian regulatory authorities.*

The Forest Products Laboratory agrees to conduct its certification programs in full accordance with CAN-P-3C. The "Requirement" listed in 9.3 will be adhered to.

The Forest Products Laboratory, in response to 9.3.4. and 9.3.5 reaffirms its position to accept full responsibility for test results and for its certification program. The certification organization is self sufficient (both in staff and facilities) to perform the required examinations and test in the subject areas for which accreditation is sought. Contract Laboratories will not be used for testing purposes. The certification organization contacts the chairman and secretary of the technical committee for the applicable standard, if an interpretation of portions of the document is required.

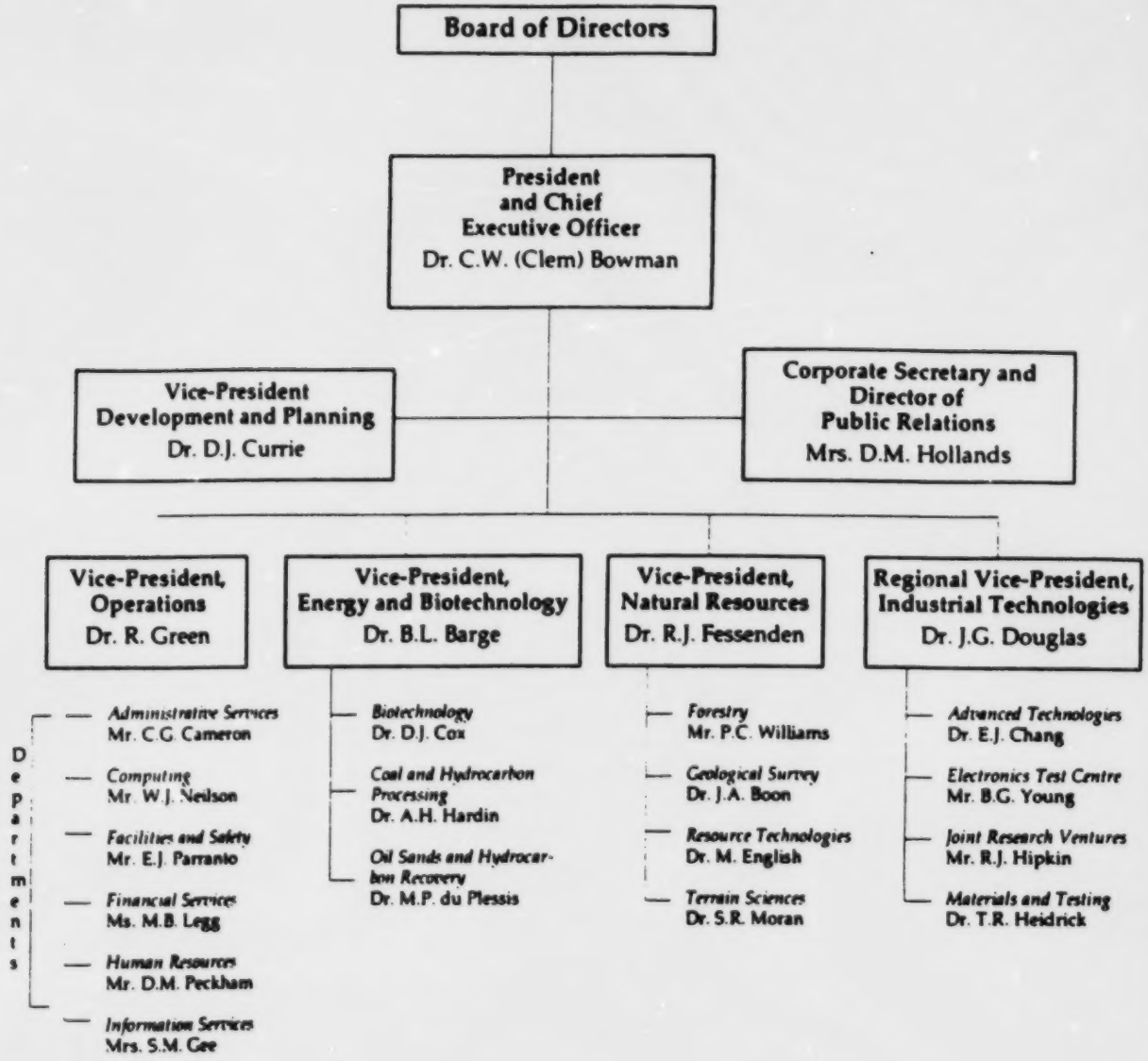
The certification organization has an information kit available for distribution to prospective clients. This information kit can be obtained free of charge upon request. It contains background information re the certification organization, a sample application form, a sample of the legal agreement plus other relevant information.

The certification organization is cognizant of the fact that the 1990 National Building Code will reference CAN-CSA-0325.0-88. This reference will also be incorporated in the provincial building codes. Therefore, liaison will be established with the appropriate regulatory authorities to ensure that they are aware of the panel products certification program.

Appendix 4.1

Senior Management Staff Organization

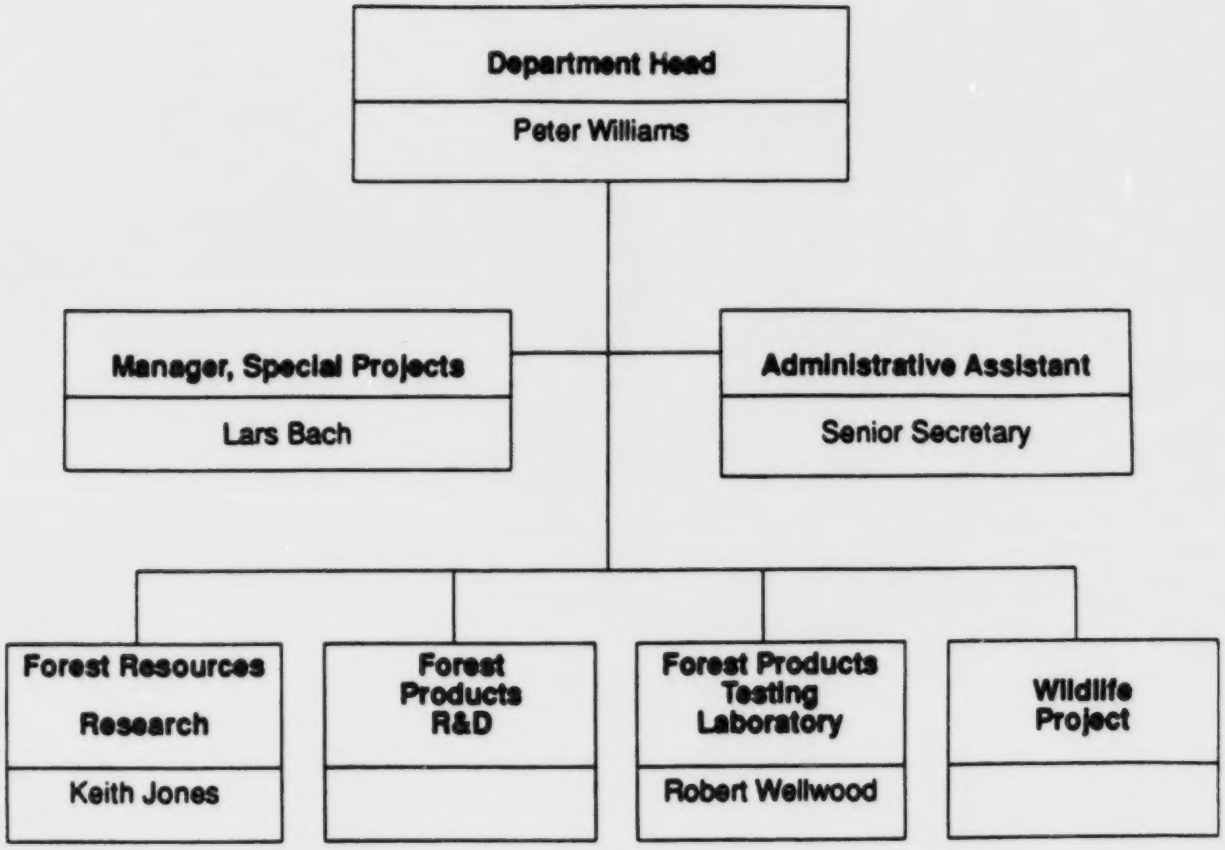
Senior Management Staff



Appendix 4.2

Forestry Department Organization

Forestry Department

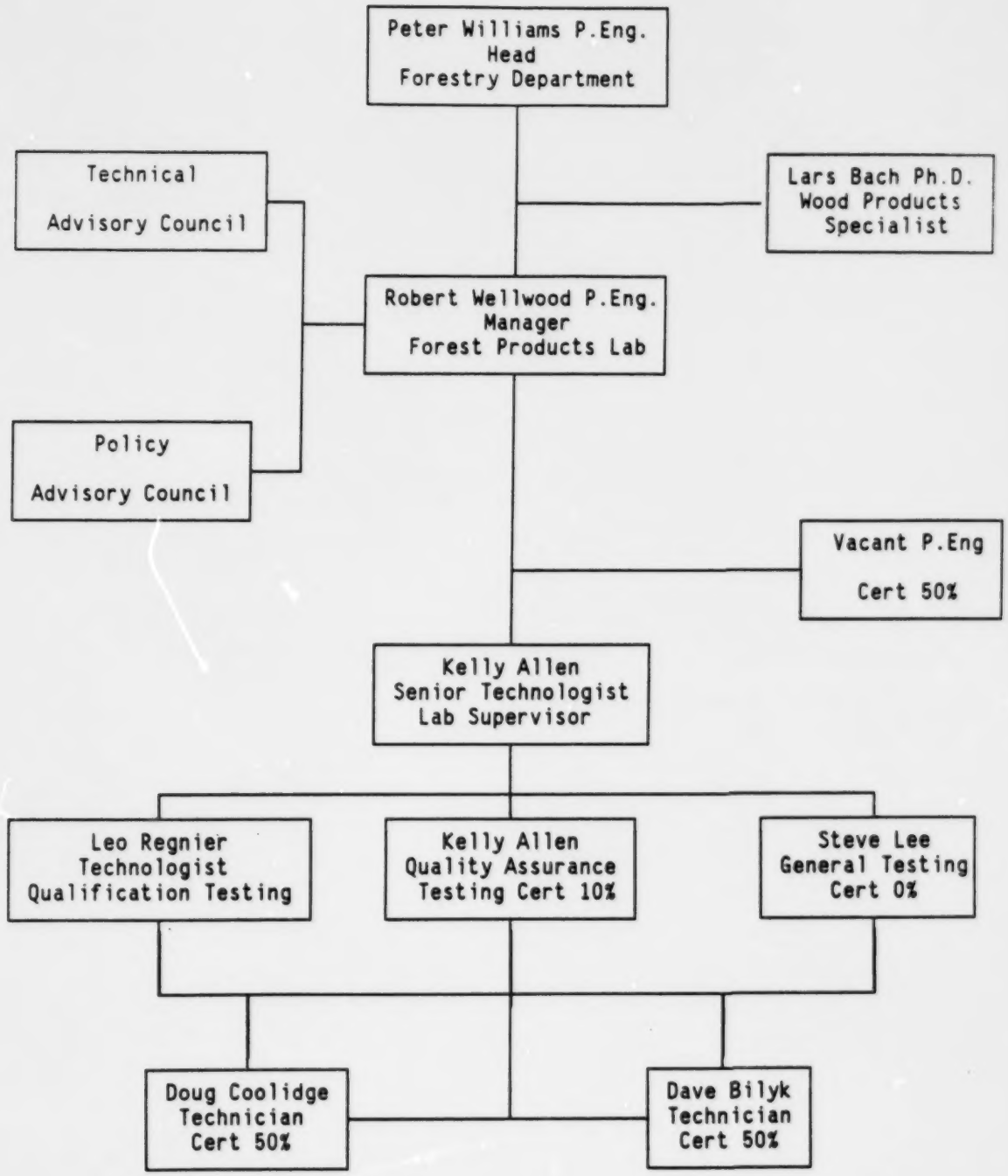


February 2, 1989

Appendix 4.3

Certification Unit Organization

CERTIFICATION ORGANIZATION



——— shows the alternate reporting relationships for special projects product testing

Appendix 4.4

Terms of Reference for Technical Advisory Council

TERMS OF REFERENCE FOR TECHNICAL ADVISORY COUNCIL

1. Name

The Council shall be known as the Advisory Council to the Forest Products Laboratory or the Forestry Department of the Alberta Research Council as it relates to its certification program.

2. Scope

This document is to be used in accordance with "Criteria and Procedures for Accreditation of Certification Organizations" as published and amended from time to time by the Standards Council of Canada.

3. Objective

The objective of the Advisory council is to provide technical direction to the certification organization in developing and maintaining a certification program in the field of wood products.

4. Membership

4.1 The Advisory Council shall consist of not less than 7 members but not more than 15 members including the Chairperson.

4.2 The membership shall be broadly based geographically and may include regulatory, government, consumer, scientific and special national interest groups.

5. Selection

Selection shall consider the following;

5.1 Members interest in and knowledge of the application of National Standards as related to certification programs.

5.2 Professional and technical competence.

5.3 Ability of individuals to contribute to council activities through correspondence and attendance of meetings.

6. Appointments

6.1 Members shall e appointed for a two year period and may be appointed for a further term.

6.2 Appointments shall be such, if possible, that fewer than half of the terms of membership terminate in any one year, in order to provide continuity.

6.3 Vacancies shall be filled as soon as possible keeping in mind the need for broad representation geographically.

7. Chairperson

7.1 The chairperson shall be a staff member of the Forestry Department of the Alberta Research Council.

7.2 The council may appoint a vice-chairperson who will act is the chairperson is unavailable.

8. Meetings

8.1 Meetings shall be held annually, or at the call of the chairperson at a location and time determined by the chair.

8.2 A quorum shall consist of more than 50% of the appointed members, including the chairperson.

8.3 Alternate members may be permitted as a substitute for absent members with prior approval of the chairperson and may exercise voting privileges with the consent of the chair.

8.4 Specialists may be invited by the chairperson to attend meetings as advisors, but shall not have voting privileges.

8.5 Notice of meetings shall be distributed to members at least three weeks in advance.

8.6 Roberts Rules of Order shall govern the conduct of business at all meetings.

9. Voting

9.1 Discussions on all motions shall be established by a 50% majority of members present.

9.2 Motions shall be so worked to indicate that approval or disapproval will result in a course of action supported by the majority.

9.3 Proxy votes shall not be permitted.

10. Letter Ballot

10.1 An affirmative vote amounting to at least 50% of the appointed members shall be required for approval on any issues just put forward for letter ballot.

10.2 Substitute or alternate members shall no be allowed to vote in a letter ballot.

10.3 The letter ballot shall have a due date. Ballots not retired returned by the due date and after one follow up contact shall be considered affirmative votes.

10.4 Attempts shall be made to resolve negative votes by follow up action by the chairperson. The council shall be informed at the next meeting of any unresolved votes.

11. Sub Committees

11.1 The chairperson, on the advice of the council may create sub committees or appoint ad-hoc committees when required.

11.2 The chairperson of the sub committee or ad-hoc committee shall be a member of the advisory council. However, non appointed and specialists may serve as members of such committees.

12. Other Recognized Documents (ORD's)

12.1 These documents shall be prepared when any of the following conditions exist:

a) supplementary information to a Standard is required,

b) there is a need to have portions of the Standard interpreted,

c) a product is to be tested, but no previous standard exists.

12.2 The Advisory Council shall be consulted when ORD's are used in testing procedures. The extent of the consultations will depend on the nature and complexity of the matter, and the degree of urgency required in its' resolution.

12.3 Certification when no appropriate standards exist.

a) The certification organization circulates to the Advisory Council a summary of the situations to determine whether it is advisable to proceed with the ORD, and requests comments.

b) The certification organization, upon receipt of approval from Council, arranges meetings with representatives of the industry to explore such matters as:

i) claims of the manufacturer

ii) manufacturing techniques

iii) general requirements pertaining to the use of the product.

13. Travelling Expenses

Actual and reasonable living and travelling expenses shall be paid to members of the Advisory council while performing council business.

Appendix 4.5

Policy Advisory Board - Terms of Reference

Policy Advisory Board

Terms of Reference

1. Name

The "Board" shall be known as the Policy Advisory Board to the Forest Products Laboratory as it relates to the certification program.

2. Scope

This document is to be used in accordance with "Criteria and Procedures for Accreditation of Certification Organizations", as published and amended from time to time by the Standards Council of Canada.

3. Objective

The objective of the Policy Advisory Board is to provide advice on policy and procedure to the certification organization in developing and maintaining a certification program in the field of wood products. The Board shall be responsible to provide advice or information in the following areas:

a) Special products requirements manufactures for export and domestic markets.

b) Changes required to the application form and its implementation.

c) Informing of feedback received from the construction industry, foreign markets and regulatory authorities on the performance of the certified program.

d) Requirements for new equipment for testing purposes.

e) The generic promotion of the certification mark to ensure that consumers are aware of the logo.

f) Scope of services to be provided by the certification organization, including the expansion of areas of certification related to products produced by the mills.

4. Membership

a) The Policy Advisory Board shall consist of one appointed member from each mill participating in the certification program. There

shall be two members from the Forestry Department, one of which must be the manager of the certification program, the other shall be a senior staff member.

b) Mill membership shall be on a voluntary basis and not a requirement to participate in the certification program.

c) A member from a decertified mill must abstain from attending meetings until the mill is re-accredited.

5. Chairperson

a) The chairperson shall be a member from an accredited mill, selected at the first meeting of the Board and at an annual meeting thereafter.

b) The chairperson shall serve for a one year term but can be reappointed for a second term by a majority vote.

c) The Board may appoint a vice-chairperson who will act if the chairperson is unavailable.

d) The vice-chairperson shall be a member from an accredited mill selected at the first meeting of the Board and at an annual meeting thereafter, or at the first meeting following the vacancy of the vice-chairperson.

6. Secretary

The secretarial services shall be supplied by laboratory staff, preferably the manager of the certification program. The secretary shall be responsible for the distribution of the minutes and shall disseminate relevant information to all members of the Board.

7. Meetings

a) Meetings shall be held at least three times a year or at the call of the chairperson at a location and time determined by the chair.

b) A quorum shall consist of more than 50% of the membership including the chairperson and the secretary (if the secretary is the manager of the certification program).

c) Alternate members may be permitted as substitutes with prior approval of the chairperson and may exercise voting privileges with the consent of the chair.

d) Specialists may be invited by the chairperson to address or advise.

e) Notice of meetings shall be distributed at least three weeks in advance. An exception can be made or emergencies or special meetings called by the chairperson.

f) Roberts Rules of Order shall govern the conduct of business at all meetings.

8. Voting

a) Discussions on all motions shall be established by a 50% majority of members present.

b) Motions shall be so worded to indicate that approval or disapproval will result in a course of action supported by the majority.

c) The secretary shall be a voting member if he/she is the manager of the certification organization.

d) Proxy votes shall not be permitted.

e) Letter ballots shall not be used by the Board.

9. Subcommittee

a) The chairperson, on the advice of the Board may create sub-committees or appoint ad-hoc committees when required.

b) The chairperson of the subcommittee or ad-hoc committee shall be a member of the Board. However, non-appointed members and specialists may serve as members of such committees.

10. Travelling Expenses

Actual and reasonable living and travelling expenses shall be paid to members of the Advisory Board while performing Council business.

Appendix 4.6

Resume of Peter C. Williams

RESUME
of
PETER C. WILLIAMS

550 Wolf Willow Road
Edmonton, Alberta
T5T 1E4

Telephone: (403) 487-8541 (Res.)
(403) 450-5413 (Bus.)

EDUCATION

1969 M.Sc. in Advanced Electrical Engineering from the University of Aston in Birmingham (UK).

PROFESSIONAL AFFILIATIONS

IEEE Institution of Electrical and Electronic Engineers Senior Member

APEGGA

Professional Engineer

AWARDS

1984 The Canadian Electrical Association Research and Development Award in recognition and appreciation of valued services and contributions to the Canadian Electrical Association Research and Development Program.

ACTIVITIES

Past President , Alberta Special Olympics

Fund Raising Chairman, 1989 Ross Sheppard Composite High School, Trek to Mount Everest.

INTERESTS

Fishing, restoration projects.

EXPERIENCE

The Alberta Research Council 1988 - present

Department Head, Forestry Department.
Responsible for the establishment of the newly formed Forestry Department.
Department Head, Industrial Technologies Department 1986-88. Responsible for the management of a department complement of 57 people engaged in research, development and testing activities in the field of industrial technologies and service to Alberta industries in particular the Forest Products sector.

Selected Contributions 1980 - 1986

Coordinated the **Joint Research Venture** initiative and led negotiations with potential partners. Completed documentation which secured extended government funding for the initiative.

Developed documentation for special government funding approval for the **Electronics Test Centre project.** During the planning and early construction stages assumed "Acting General Manager" status. Developed proposals for cooperative work with the Canadian Standards Association and led preliminary discussion concerning recognition of the electronics test centre by European Test agencies located in Germany, the U.K., the Netherlands and Denmark.

Developed documentation for special government funding approval for the **Electronics Information Centre** and on successful completion of negotiations and approval of funding, completed an implementation plan.

Alberta Power Limited, Edmonton, Alberta 1977-1980

Manager, Transmission Planning Group

Responsible for transmission planning within the company service area in Northern and Eastern Alberta.

Separately, responsible for the research and development activities of Alberta Power Limited and Yukon Electric Limited.

Selected Contributions in Research and Development

At the Advisory Board level, worked directly in the development of operational policies and procedures for the Canadian Electrical Association R&D program.

Headed the Transmissions Systems Subcommittee within the above program.

B.C. Hydro and Power Authority, Vancouver, B.C. 1969-1976

Senior Engineer Designer

Specialist in transmission line design, construction and testing.

Selected Contributions in Research Development and Testing

Participated in the design, specification and testing of all hardware and insulators for the MICA 500kV transmission line project.

Witnessed high voltage testing of manufacturers prototypes in Canada, the Netherlands and Italy.

Designed audible noise control structures and acted as project engineer in their construction.

Designed and tested a safety procedure which eliminated often fatal accidents to linemen from induced current and voltage effects.

Appendix 4.7

Resume of Lars Bach

RESUME

LARS BACH, Ph.D., P.Eng.
WOOD PRODUCTS ENGINEER

EXPERIENCE

Diversified academic and industrial experience in product development research, processing, product application, timber engineering, construction planning and project management.

1980 - **Alberta Research Council**

- Manager
  - Formulation of ARC Forest Products R&D Program (1980-88)
  - Project Management & Wood Products Engineering (1980-)
  - Special Projects (1988-)

1975-80 **MacMillan Bloedel Research Ltd., Vancouver, B.C.**

- Section Head and Research Associate
  - Research and Development on new products and processing
  - Performance testing (materials, building components and systems)
  - Technical service projects

1969-75 **Technical University of Denmark, Dept. Civ. Eng., Building Material**

- Associate Research Professor
  - Research and Development - building materials
  - Lecturer and student advisor (rheology of building materials)
  - Consulting to private industry on building materials/planning

1968-69 **Berg Bach & Kjeld Egmose A/S, Aalborg, Denmark**

Civil Engineering & Building Construction

- Executive Secretary/Project Engineer
  - Construction planning
  - Feasibility project studies

1965-68 **Western Forest Products Laboratory, Vancouver, B.C.**

- Research Scientist/Officer
  - Timber Engineering
  - Wood Physics
  - Grad Students (Hon. Asst. Prof. at U.B.C.)

1962-65 **Bureau of Naval Research, U.S. Navy & National Science Foundation**

Projects at State University of New York, Syracuse, N.Y.

- Research Assistant/Fellow
  - Wood Products Engineering Projects

1960-62 **Corps of Engineers, Danish Army**

- Sergeant
  - Military Engineering (construction, surveying, demolition)

QUALIFICATIONS

Registered as Professional Engineer in Alberta and B.C. (forest products) and in Denmark (building construction). Masters Degree (1960 Copenhagen), Ph.D. (1965, 1966 Syracuse, N.Y. - Wood Products Engineering and Rheology). Technical Committee member of ASTM D-07, CSA 437, CSA 086, CSA 325 and the USA/Canada Light Frame Structures Sub-Committee. Adjunct Professor at the University of Alberta. Member of the Board of Directors for Aktie-Plantage Selskabet for Aalborg Amt. Member of the Forest Products Research Society, Canadian Society for Civil Engineering, the Society of Sigma Xi and the New York Academy of Sciences.

PUBLICATIONS

About 40 technical publications on building materials and wood products engineering. Five different patents issued in the U.S.A. pertaining to panel manufacturing. 14 patents pending in Canada and overseas.

September 1989

Appendix 4.8

Resume of Robert Wellwood

RESUME

ROBERT WELLWOOD, P.Eng.
Wood Products Engineer

EXPERIENCE

Areas of experience include Forest Products Research (Composites and Timber Engineering), Feasibility and Technical Assessment Studies, and Process Research/Quality Control.

1986 - *Alberta Research Council, Natural Resources Division*
* Manager of the Forest Products Testing Laboratory
  - Responsible for maintaining accreditation by the Standards Council of Canada
  - Physical/mechanical evaluation of forest products
  - Research and development in composite materials

1983-1986 *Alberta Research Council, Applied Sciences Division*
* Assistant Research Officer - Forest Products
  - Forest products testing and development
  - Project development

1980-1983 *Northwest Panelboard, Smithers*
* Quality Control Supervisor
  - Start up a new plant
  - Establish quality control programs
  - Process research to establish optimum production

1978-1980 *Norman Springate & Associates Limited*
* Process Specialist
  - Feasibility and technical assessment studies
  - Assistant Project Manager for the design and construction of Northwest Panelboard at Smithers

1975-1977 *University of British Columbia*
* Teaching Assistant
  - Organize and teach two lab courses on physical/mechanical properties of wood

1973-1975 *Forest Research Institute, Malaysia*
* Research Scientist, Timber Engineering Division
  - Strength and machining properties of tropical woods
  - Building codes

1975 *Universiti Pertanian, Malaysia*
* Special Lecturer
  - Establish three labs in a new forestry faculty

QUALIFICATIONS

B.S.F. 1973 University of British Columbia
M.Sc. (Wood Science) 1977 University of British Columbia
R.P.F. 1979 Association of British Columbia Professional Foresters
P.Eng. 1987 Association of Professional Engineers, Geologists and Geophysicists of Alberta

December 1, 1989

Appendix 4.9

Job Description - Wood Products Engineer

Career opportunity

ALBERTA RESEARCH COUNCIL

Careers in

R&D

The mission of the Alberta Research Council is to advance the economy of the province by promoting technology development, performing applied research and providing expert advice, technical information and scientific infrastructure that is responsive to the needs of the private sector and supports activities in the public sector.

WOOD PRODUCTS ENGINEER

The Alberta Research Council is a crown corporation dedicated to promoting responsible economic development of natural resources and industry in the Province of Alberta through a broad range of research in science and technology.

Our Forestry Department is currently expanding its work in Forest Products Research and is seeking an experienced individual to undertake technical projects.

As part of a team reporting to a program manager, you will supervise tests on structural panels and components; design testing systems, perform product development research, write research project proposals and technical reports; conduct feasibility studies on new project proposals; and develop appropriate short- and long-term work plans. A major responsibility will be the administration of a Certification Program for structural panel products.

Candidates should have a degree in Mechanical, Civil or Forest Products Engineering and some experience in the forest products industry. A working knowledge of materials engineering, electronics, programming and forest products is desirable. Candidates should be eligible for membership in APEGGA and will be required to work both in laboratory and mill environments. Engineering Technologists with experience in testing, reporting and administration will also be considered.

This position is initially for a one year period to May 31, 1990 with the possibility of renewal. Salary will be commensurate with qualifications.

WE OFFER A RESTRICTED SMOKING ENVIRONMENT

Please apply in writing quoting Competition No. ARC-1244 before May 19, 1989 to:

Alberta Research Council
Human Resources Department
250 Karl Clark Road
Edmonton, Alberta

Mailing address:
PO Box 8330
Postal Station F
Edmonton, Alberta
T6H 5X2

Appendix 4.10

Resume of Kelly Allen

RESUME

KELLY ALLEN
Diploma of Technology
Industrial Instrumentation Technologist

EXPERIENCE

Experience in the testing and manufacturing of wood products.

1986 to — Alberta Research Council, Applied Sciences Division, Edmonton, Alberta

* Technologist, Forest Products
  - Testing of waferboard and OSB products
  - Mechanical testing of wood products

QUALIFICATIONS

1980 - 1982 — NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY (N.A.I.T.), EDMONTON, ALBERTA

Graduated in Industrial Instrumentation Engineering Technology

Courses included:

- Materials testing
- Technical communications
- Statistics
- Microprocessors

March 1987

RESEARCH COUNCIL

Position description

1. IDENTIFYING INFORMATION

DEPARTMENT: FORESTRY

POSITION NUMBER: 6123-

LOCATION: Mill Woods

CURRENT CLASS:

REPORTS TO: 6123-

PROPOSED CLASS: Tech. II

WORKING TITLE: Forest Products Testing Lab Technologist

EFFECTIVE DATE:

REASON FOR SUBMISSION
- ☐ NEW POSITION
- ☐ UPDATE
- ☐ RECLASSIFICATION

NATURE OF SUBMISSION
- ☐ EMPLOYEE REQUEST
- XEX MANAGEMENT REQUEST

EMPLOYEE SIGNATURE: P. Wellwood — DATE:

DEPARTMENT HEAD SIGNATURE: F. Williams — DATE: 25th Nov 88.

VICE-PRESIDENT SIGNATURE — DATE:

COMMENTS

The incumbent has resigned to take another position Replaced by Ken D. C C

2. POSITION SUMMARY

(A capsule overview of the position and its purpose)

- Supervise junior technologists and technicians
- Supervise the maintenance, calibration, and operation of testing equipment
- Organize the day-to-day work schedule in the lab
- Conduct a variety of tests following standard procedures
- Record data following Forest Products formats
- Conduct basic calculations to reduce data
- Check the work of those supervised
- Use IBM/Symphony to produce report-ready data sheets

Appendix 4.11

Resume of Leo Regnier

RESUME

LEO REGNIER
Diploma of Civil Engineering Technology

EXPERIENCE

A Civil Engineering Technologist with seven years of supervisory and training experience in surveying, laboratory and field analysis of asphalt pavements, studies of environmental effects of river erosion and mechanical testing of forest products.

May 1980 to present — Alberta Research Council, Edmonton, Alberta

* Technologist, Forest Products
  - Technologist assisting in the formulation of ARC Forest Products Projects
  - Mechanical testing of wood products
  - Calibration of test equipment
  - Data analysis and test reports on IBM Symphony

* Research Lab Technologist II, Civil Engineering
  - Studying performance of asphalt highway pavements and environmental effects of river erosion

Sept. 1979 to Sept. 1980 — C. U. Engineering, Edmonton, Alberta

* Survey Party Chief
  - Engineering and design of rural gas line installation

June 1979 to Sept. 1979 — E.P.E.C. Consulting, Grande Prairie, Alberta

* Survey Party Chief
  - Design and engineering of municipal subdivisions

May to August 1978
Sept. 1976 to May 1977
July to August 1975 — Dept. of Northern Saskatchewan, Prince Albert, Saskatchewan

* Survey Technician I and Stock Clerk
  - Government construction of grid roads in Northern Saskatchewan

QUALIFICATIONS

May 1979 — Diploma - Civil Engineering Technologist

March 1988

Appendix 4.12

Example - Calibration Certificate

VACS LTD.

24 Queen Street E. Suite 300
Brampton, Ontario L6V1A3
(416) 457-3696

MATERIAL TESTING EQUIPMENT & CALIBRATIONS TO A.S.T.M. STANDARDS

CERTIFICATE OF VERIFICATION TO A.S.T.M. "E4" STANDARD

MACHINE: Instron 4204, s/n 108

TRANDUCER: 25 kn compression & tension loadcell, s/n 015

LOCATION: Alberta Research Council
250 Karl Clark Road
Edmonton, Alberta

VERIFICATION DATE: May 8, 1989

This document is to verify that the above described machine has been calibrated by "VACS Calibration Service", and the loading range below to be within a tolerance of 1%.

MACHINE RANGE	LOADING RANGE
25 kn	2.5 kn to 25 kn

The method of verification and data compiled is in accordance with A.S.T.M. specification "E4". The testing devices used for this verification have been calibrated per A.S.T.M. "E74" and are traceable to the National Bureau of Standards, Washington D.C..

CALIBRATION DEVICES:

S/N:	1102 ind.	84-280cell	09494cell	06874cell	25863cell	CROWN
Date:	4/88	9/87	4/88	4/88	4/88	8/89
Load:	500 klb	500 klb	50 klb	5 klb	500 lb	22 k
JOB#:	CRS#	CRS139	CRS275	CRS274	CRS273	D.W.

Calibrated by: D. Magee

Derek Magee, C.E.T.

CALIBRATION DATA AGREES WITH SERIAL NO ON INSTRUMENT

Certificate of Calibration

and Traceability to the

United States National Bureau of Standards

SERIES 200:
(889,644 N.)
MOREHOUSE PROVING RING, S/N 5633: 200,000 lbf cap TENSION & COMPRESSION

(APPARATUS CALIBRATED AND SERIAL NO.)

MOREHOUSE PROVING RING, S/N 5633: was calibrated according to ASTM specification E74-77, "Standard Methods of Calibration of Force Measuring Instruments for Verifying the Load Indication of Testing Machines."

The Proving Ring, S/N 5633,has an uncertainty of 178.82 Newtons in Tension, and 202.25 Newtons in Compression, as determined from statistical analysis.

The calibration data is correct for a temperature of 23° C. For a temperature of t°c, the value of the calibration factor should be corrected for temperature using the formula:

$$d_{23} = d_t - 0.00027\,(t-23)\,d_t$$

where d_{23} = deflection at a temperature of 23° C.

d_t = deflection at a temperature of t° C.

t = temperature, degrees Celsius.

This calibration is certified traceable to the U.S. National Bureau of Standards according to the following documentation and calibration apparatus used:

Calibration Apparatus Used:

TRANSFER STANDARDS, S/N 2985,4037,& 4858 calibrated by the U.S. National Bureau of Standards, Lab. No's 737.04/226550 and 737.04/226001. Average uncertainty of standards is 99.63 Newtons

Date

February 23, 1983

Calibrated

MOREHOUSE INSTRUMENT COMPANY

MOREHOUSE INSTRUMENT CO.

MOREHOUSE INSTRUMENT COMPANY
FORCE CALIBRATION LABORATORY
1742 SIXTH AVENUE
YORK, PENNSYLVANIA 17403-2875
PHONE 717/843-0081

FORM 229-3

Appendix 4.13

Testing Capabilities List

Present Capability of the Testing Laboratory

Scope

The Testing Laboratory has been accredited by the Standards Council of Canada to conduct a wide variety of tests on structural panel products and engineered wood composites, according to product, performance and engineering standards:

CSA Standards

- *CAN3-O86:* Engineering Design in Wood,
- *CAN3-O115:* Hardwood and Decorative Plywood,
- *CAN3-O121:* Douglas-Fir Plywood,
- *CAN3-O122:* Structural Glued-Laminated Timber,
- *CAN3-O151:* Canadian Softwood Plywood,
- *CAN3-O153:* Poplar Plywood,
- *CAN3-O177:* Structural Glued-Laminated Beams,
- *CAN3-O188:* Mat-Formed Wood Particleboards and Waferboard,
- *CAN3-O325:* Performance Testing of Panel Products (Draft)
- *CAN3-O437.0/O437.1/O437.2:* Waferboard and Strandboard Binder Testing, and
- *CAN3-S347:* Method of Test for Evaluation of Truss Plates Used in Lumber Joints.

ASTM Standards

- *ASTM D143:* Methods of Testing Small Clear Specimens of Wood,
- *ASTM D198:* Methods of Static Tests of Timbers in Structural Sizes,
- *ASTM D1037:* Methods of Evaluating the Properties of Wood-Base Fiber and Particle Panel Materials,
- *ASTM D1761:* Methods of Testing Mechanical Fasteners in Wood,
- *ASTM D2016:* Test Methods for Moisture Content of Wood,
- *ASTM D2164:* Testing Structural Insulating Roof Deck,
- *ASTM D2718:* Methods of Testing Plywood in Rolling Shear,
- *ASTM D2719:* Methods of Testing Plywood in Shear Through-the-Thickness,
- *ASTM D3043:* Methods of Testing Plywood in Flexure,
- *ASTM E72:* Method of Conducting Strength Tests of Panels for Building Construction,
- *ASTM E196:* Practice for Gravity Load Testing of Floors and Flat Roofs, and
- *ASTM E661:* Test Method for Performance of Wood and Wood-Based Floor and Roof Sheathing Under Concentrated Static and Impact Loads.

American Plywood Association

- *American Plywood Association:* Performance Tests.

There are four major activities in the Testing Laboratory:

- sample preparation and conditioning
- small sample testing
- large sample testing, and
- data processing and management

A guide to the Testing Laboratory, which describes the work stations, is given in Figure 17.

Sample Preparation and Conditioning

Most testing requires sample preparation. Panels and other wood-based materials must be cut to specific sizes and shapes, according to specified test methods. Then they must be weighed and measured. For cutting and shaping, the Testing Laboratory uses a panel saw, a table saw, a band saw, a shaper and a jointer. For weighing and measuring, there are scales, micrometers, calipers and tapes.

Conditioning serves two purposes, preparatory to testing:

- to stabilize sample moisture content at standard values, under conditions of controlled temperature and humidity, and
- to accelerate the aging of samples. Artificial aging is used in durability tests and in tests of dimensional (thickness) stability.

Boil tanks, ovens (small and walk-in), cooking baths, a vacuum pressure vessel, a steam tank, a conditioning tank (soak or water spray) and a freezer are available for sample conditioning.

Small Sample Testing

In product testing, small samples are used to predict the properties of the full-size product.

Most of this work is done on the Instron Universal Testing Machine. Samples are subjected to bending or tension forces to calculate modulus of rupture, modulus of elasticity or strength of the internal glue bond. Tension tests, nail and screw withdrawal, hardness and shear tests are also performed.

The Globe Shear Tester is used to evaluate the bond quality in plywood samples. Shear stress at failure can also be determined.

Although most product testing is destructive, non-destructive methods are also used. An example is vibration testing. Samples are subjected to a vibrat-

Appendix 4.14

Testing Laboratory Quality Control

FPLI-31

QUALITY PROCEDURES MANUAL

Forest Products Laboratory

Industrial Technologies Department

Applied Sciences Division

Alberta Research Council

February 17, 1987

Preface

The Forest Products program was established to assist the forest products industry in becoming more efficient and in taking much greater advantage of the forest resources in the provinces. The program has three basic objectives:

(a) to increase and improve the commercial utilization of Alberta's forest resources, with emphasis on aspen;

(b) to promote and support research in the development and efficient use of Alberta's existing and potential forest resources; and

(c) to encourage the development of Alberta based scientific and technical expertise in the field of forest products.

The Forest Products group is achieving these objectives by providing assistance to industry through materials testing, short-term technical assistance and code and standards development; panel development and optimization; wood quality evaluation on the mechanical, chemical and physical properties of wood; and the chemical treatment of wood to improve moisture, fire and rot resistance.

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FPLI - 31 February 17, 1987

INTRODUCTION

This document is a guide to the policies and procedures required to operate the Forest Products Test Laboratory in a proficient and ethical manner. All work carried out in the Forest Products Test Laboratory shall follow these policies and procedures.

This manual is necessary to retain a high level of quality in the persons, procedures and equipment used in the Forest Products Test Laboratory. Such a high level ensures accreditation with the Standards Council of Canada, the governing body responsible for recognizing testing organizations.

The policies and procedures are separated as follows:

a) General,
b) Safety,
c) Administration,
d) Proposals,
e) Sampling,
f) Material Handling,
g) Testing,
h) Reporting and
i) Equipment.

This manual is organized to describe the functions of the test lab and to clarify responsibilities of the persons working in the test lab. It is meant to instruct the new employee in the test lab as well as to be a reference for the existing employees.

GENERAL

1.0 Safety

1.1 All work shall be done with the highest respect for the safety of all workers.

1.2 No work shall be performed if such work is deemed unsafe.

1.3 All employees are equally responsible for determining the safety of their work environment and have a right to refuse work that is deemed unsafe.

2.0 Workmanship

2.1 All work shall be done by qualified persons in a neat and workmanlike manner conforming to industry standards.

3.0 Confidentiality

3.1 All work done shall be held in the strictest confidence.

4.0 Security

4.1 All test results, equipment, tools and materials shall be secure from persons other than the Forest Products staff.

5.0 Conflicting Requirements

5.1 In the event of a conflict between the procedures manual and any other requirements, a ruling from a senior Professional shall be obtained before any work is done.

5.2 Where governmental or other regulatory codes conflict with this manual, the more rigid shall apply.

5.3 Any deviation from this manual must be approved by a senior Professional.

SAFETY

1.0 Scope

This section covers the general safety procedures to be followed. Detailed procedures can be found in Occupational Health and Safety's procedures manual.

2.0 General

The safety of all the persons in the Test Laboratory is of the utmost importance.

3.0 Responsibilities

3.1 Each and every staff member is responsible for his own safety. If he feels a tool, machine or his work environment is unsafe, he has the right to stop work. That staff member shall report to a Professional and describe the situation so that it may be remedied.

3.2 If the situation is not resolved to the satisfaction of the employee, it is his responsibility to ensure he does not work in the unsafe situation.

4.0 Conduct

4.1 All staff members shall conduct themselves in a safe and professional manner.

5.0 Training

5.1 All new staff members shall be properly trained with each tool and on all equipment before using it without supervision.

5.2 All staff shall be trained on new equipment before using it without supervision.

5.3 Proper training shall consist of instruction by an individual who is competent in his operation of that tool or piece of equipment.

6.0 Protection

6.1 Steel-toed shoes shall be worn by all individuals working in the lab.

6.2 Eye protection shall be worn by all individuals when using the saw room or where circumstances warrant use.

6.3 Ear protection shall be worn by all individuals when testing results in sound pressures that exceed recommended levels.

ADMINISTRATION

1.0 Scope

This section covers the issuing of work orders and filing.

2.0 General

The administrative function is necessary to ensure that the work done in the Testing Laboratory is documented properly.

3.0 Work Orders

3.1 Any work carried out at the Forest Products laboratory shall be referenced to a contract number or a work order number.

3.2 The work order must be issued before any work starts.

3.3 Work orders shall be initiated by a Professional of the test lab with proper signing authority.

3.4 The work order shall reference a proposal number if the work is part of a proposal.

3.5 The work order must include the following:

a) Client name,
b) proposal number,
c) cost quoted,
d) cost centre,
e) date due
f) Requisitioner's name,
g) Expenditure Officer's name and signature and
h) Client purchase order number

3.6 Completed work orders shall be submitted for expenditure officer's signature.

3.7 Signed work order copies shall be forwarded/filed as follows:

a) white, blue -- financial services immediately,
b) canary -- expenditure office and
c) pink, orange -- hold until completion.

3.8 Active work orders (pink and orange copies) shall be kept in a separate file.

3.9 On project completion, Professional shall forward pink copy, along with the client purchase order, to financial services and orange copy to completed project file.

4.0 Project Filing

4.1 All work carried out at the Forest Products laboratory shall be referenced to a contract number or a work order number. No charge work, such as short-term testing for Alberta industry, shall be filed in chronological order under the appropriate heading (Response to Technical Inquiries).

4.2 The project files shall be divided into 3 sections as follows:

a) proposals,
b) active projects and
c) completed projects.

4.3 Proposal files shall be numbered consecutively and chronologically. When a proposal becomes a project, the proposal file remains active.

4.4 Active Projects files shall include the following:

a) a copy of the proposal,
b) a copy of the signed work order,
c) acknowledgment by Client or a Purchase Order issued by the Client and
d) any correspondence on the project.

On completion of the project, this file shall be closed and the contents transferred to the Completed Projects file.

4.5 Completed Projects files shall include the following:

a) contents of Active Project file,
b) final report and covering letter,
c) project reviews at 50% and 85% completion and
d) memo to Finance Department for billing of the completed work.

4.6 All material to be filed shall be cross-referenced in the appropriate files.

5.0 Administration Files

5.1 The administration files include correspondence, monthly reports, contracts, budget, patents, etc.

5.2 The administration files include the following:

a) day files,
b) FPLE reports,
c) FPLI reports,
d) FPLC reports,
e) general files (correspondence),
f) personnel files and
g) technical files.

5.3 The day files are filed by the names of the staff of the Forest Products program. The number of folders per staff member shall be identified by need.

5.4 Lab reports for external distribution, FPLE reports, shall be filed in numerical order. One copy of each report, if pertaining to a project, shall also be filed in the appropriate project file.

5.5 Lab reports for internal distribution, FPLI reports, shall be filed in numerical order. One copy of each report, if pertaining to a project, shall also be filed in the appropriate project file.

5.6 The general or correspondence files shall be filed alphabetically by company name and subject matter.

5.7 Personnel files shall be filed alphabetically and shall be kept confidential.

5.8 All material to be filed shall be cross-referenced in the appropriate files.

PROPOSALS

1.0 Scope

This section covers the initiation and contents of the proposals prepared in the Forest Products Program.

2.0 General

All proposed work for outside clients shall be documented by a proposal prepared by the Test Laboratory staff prior to the work being performed.

3.0 Purpose and Coordination

3.1 A proposal is a document that puts forth the scope of work to be done by the Forest Products Test Laboratory. The proposal describes the responsibilities of all the parties involved in the plan.

3.2 A proposal is drafted by a Professional of the test lab in response to a client's request. The proposal shall be approved by the Manager of the Forest Products program and issued by the Head of the Industrial Technologies Department.

4.0 Contents

4.1 The proposal, normally, has the following sections, in order:

a) Introduction,
b) Work Plan,
c) Schedule and Cost,
d) Reporting and
e) Project Management.

4.2 The proposal title page shall include the following:

a) Project number,
b) Project title,
c) Client name, address and
d) Date.

4.3 The project number shall consist of the proposal number and the assigned work order number. The proposal number shall follow the format XX-PFP-YY where XX is the last two digits of the current year and YY is the next unused number in the numerical listing of proposals. The work order number is assigned by the Professional responsible for the job.

4.4 The introduction shall include the objectives of the work to be done, a description of the area of study and the general methods used.

4.5 The work plan shall describe the scope of work. It shall include a description of the materials to be used, the test procedures to be followed, a list of the tests to be performed and any other pertinent information.

4.6 The schedule shall include start and finish dates as well as dates of significant events. The cost shall indicate a fixed cost or an estimated cost for those projects run on a daily rate. The cost shall be broken down to indicate the costs of testing, reporting, sampling, etc.

4.7 The proposal shall indicate what test data is to be reported, how and when.

4.8 The proposal shall state who is supervising and managing the work.

4.9 When a proposal is revised and sent to the client, the date of the proposal shall be updated. The proposal number shall be revised by the addition of a letter after the YY portion (see Section 4.3). The first revision shall use the letter 'A', the second revision shall use the letter 'B' and so forth.

5.0 Project Acceptance

5.1 A proposal is considered a project when the proposal has been accepted in writing. No work shall proceed until the proposal has been accepted in writing.

5.2 At the time of acceptance the final proposal shall become the project instructions.

SAMPLING

1.0 Scope

This section covers the sampling of all material scheduled for testing.

2.0 General

Proper sampling of test material is essential for valid test results.

3.0 Sampling

3.1 All sampling is to be done randomly unless specified by a Professional.

3.2 The number of samples to be chosen shall be specified in the project instructions.

3.3 The project instructions shall specify who samples. Such statement shall be made after consultation between ARC, the Client and the necessary governing bodies.

3.4 Where sampling by ARC personnel is to take place at a mill or plant, the mill or plant shall be informed (ahead of time) of the sampling.

MATERIAL HANDLING

1.0 Scope

This section covers the receiving of all samples, the storage, allocation to work stations and the disposal of all the material handled by the test lab.

2.0 General

Proper materials handling is necessary to ensure that test material is available for testing and that it is in good condition.

3.0 Receiving

3.1 Shipping receipts shall be recorded in a shipping and receiving log book. The log book is the responsibility of the Technologist in charge. The person receiving the material shall identify the following in the shipping and receiving log book:

a) material received,
b) number of pieces,
c) the relevant project number,
d) condition of material (damage, etc.) and
e) who received the material.

3.2 All samples shall be labelled by a code traceable to a specific project and/or work order number. These project and work order numbers shall be specified by the Professional responsible for the project and by the project instructions.

3.3 If a bundle of samples is untied, then each individual sample shall be labelled as specified in Section 3.2 above.

3.4 Damage to panels due to shipping is to be noted in shipping and receiving log book. The note is the responsibility of the person receiving the material.

4.0 Storage

4.1 All material shall be stored so as not to cause damage to the material. Care must be taken to avoid immediate damage due to breakage or long term damage due to warpage.

4.2 Material shall be stored indoors in a dry area. Material received in a wet state shall be dried by natural means before storing.

4.3 Material shall be transported in such a manner as not to cause damage to the material.

4.4 Store material in temperature and humidity controlled rooms only as directed by the Professional responsible for that material.

5.0 Cutting of Material

5.1 The material to be cut shall be identified by a label, indicating project number and specimen number.

5.2 The material to be cut shall be cut in such a way as to provide the correct number of samples and size for the testing and to avoid waste.

5.3 The sample panel shall be cut into specimens in such a way as to avoid having all the specimens for one test cut from one area of the sample panel.

5.4 All personnel using the saws shall be suitably trained before using such equipment.

6.0 Allocation to Work Stations

6.1 All work shall proceed in the order assigned in weekly staff meetings. The Professional responsible for the project shall inform the lab Technologists of the priorities.

7.0 Disposal of Material

7.1 Client approval shall be sought before any material is disposed of. Such approval is normally sought after testing and reporting is accepted by client.

7.2 All material required by the Client to be returned to him shall be returned as soon as possible at the Client's expense.

7.3 If disposal is left to ARC, then material shall be disposed of through ARC waste management system.

TESTING

1.0 Scope

This section covers the testing of the samples.

2.0 General

Proper testing is the essence of the Testing Laboratory.

3.0 Initiation of Project

3.1 All work done in the laboratory shall be initiated by a Professional. The Technologist in charge shall have access to the Project Instructions at all times.

3.2 The work assignment shall be determined at weekly staff meetings. The Professional responsible for the project shall inform the lab Technologists of project priorities.

4.0 Tests

4.1 All the necessary tests to be performed shall be set out by the Professional responsible for that project. The Professional shall also set out the number of tests to be performed on each sample.

4.2 All tests shall be done in accordance with code requirements and industry standards.

4.3 All data collected shall be recorded in ink on data sheets or on graphs. Data sheets or graphs shall contain the following information.

a) Project number,
b) date test performed,
c) Client name,
d) material type, size (thickness), conditioning and direction,
e) test performed and
f) signature of person(s) who performed test.

4.4 All anomalous results shall be reported to the Professional in charge as soon as possible and before further testing is done.

4.5 All data shall be recorded in ink. All errors shall be crossed out with a single stroke and the correct data entered adjacent to the error.

4.6 All data shall be entered into electronic spreadsheet for data manipulation, calculations and to present in a suitable manner. Data shall be entered as soon as possible after testing is complete. The data shall be recorded on a blank spreadsheet. The blank spreadsheet to be used shall originate from the Master Disk.

4.7 Each project shall have a dedicated floppy disk(s). The floppy disk(s) shall be labelled with the following:

a) Client name,
b) project number,
c) date and
d) floppy disk number (if more than one floppy disk is required).

4.8 The monitoring of test work is left to the discretion of the Professional responsible for that project. The methods available are blind sampling, direct monitoring by senior staff and regular tests on standard or reference samples.

5.0 Checking of Test Results

5.1 All measurements and calculations shall be checked by the Technologist responsible for taking measurements or making calculations. Hard copies of all electronic spread sheets shall be checked and signed by the Technologist responsible for that spread sheet. The Professional responsible for that project shall spot check and sign all spread sheets.

6.0 Filing of Test Results

6.1 All test results shall be filed only after Professional responsible for the project has checked and signed electronic spread sheet hard copies.

6.2 All test results shall be filed according to project number first and date second.

REPORTING

1.0 Scope

This section deals with the preparation of the test data, report writing, distribution and filing, and appeal of all reports.

2.0 General

Proper reporting of test data is required to describe the testing and test data.

3.0 Preparation of Data

3.1 Upon completion of testing, the Technologist responsible for such testing shall sign all data sheets or graphs and inform the Technologist in charge of that fact. The Technologist in charge shall arrange for all data to be transferred to an electronic spread sheet and have such spread sheet checked and signed by the Technologist responsible for that transfer.

3.2 All data sheets, graphs or electronic spread sheets shall contain the following information:

a) project number,
b) test date,
c) client name,
d) material type, size, conditioning and direction,
e) test performed and
f) signature of person(s) responsible for collection and/or checking of data.

3.3 All signed data sheets, graphs and spread sheets shall be promptly delivered to the Professional responsible for the project. The Professional shall spot check and sign all spread sheets hard copies.

3.4 All data sheets, graphs and spread sheets shall be filed firstly by project number and, secondly, by date.

4.0 Interpretation of Data

4.1 The Professional responsible for the project shall review the data and interpret the data against code requirements and industry standards.

5.0 Report Writing

5.1 All test results shall be presented in either a formal report or a data report. The project instructions shall specify the format.

5.2 Formal reports and/or data reports shall show project name, client name, project number and report number.

5.3 A formal report should consist of the following:

a) summary,
b) introduction,
c) background,
d) materials,
e) test procedures,
f) test results,
g) discussion and
h) conclusions/recommendations.

5.4 A data result shall consist of only hard copies of electronic spread sheets.

5.5 Reports may be either internal or external, and status or final.

6.0 Authorization, Distribution and Filing

6.1 All reports are to be approved by the Manager of the Forest Products program. All external reports are to be issued by the Head of the Industrial Technologies Department.

6.2 The Professional responsible for the project shall determine the distribution of the report.

6.3 All reports shall be filed or referenced under the following areas:

a) project number,
b) client name and
c) report number.

7.0 Appeals

7.1 Any appeal made by a client on a report shall involve senior management. Such management shall include the Manager of the Forest Products program and the Head of the Industrial Technologies Department.

7.2 To verify the test results, the following methods are available:

a) re-examination of the test data, calculations and all records,
b) re-testing of specimens,
c) third-party testing and
d) court.

These methods shall be explored in order from a) to d). At each of the four steps shown above, every attempt to resolve the problem shall be made to limit the aggravation between the Forest Products Test Laboratory and the client without compromising the Test Laboratory's professionalism.

7.3 To verify the interpretation of the test results, the following methods are available:

a) re-examination of the test data, calculations and all records,
b) third-party interpretation and
c) court.

These methods shall be explored in order from a) to c). At each of the three steps above, every attempt to resolve the problem shall be made to limit the aggravation between the Forest Products Test Laboratory and the client without compromising the Test Laboratory's professionalism.

7.4 Before proceeding with an appeal, the Forest Products Test Laboratory and the client shall agree on the following conditions:

a) who bears the cost of the appeal,
b) who has the authority for judging the appeal and
c) how the appeal is to be closed.

EQUIPMENT

1.0 Scope

This section covers the purchase, maintenance, calibration and training required on all equipment in the test laboratory.

2.0 General

Proper operation and maintenance of test equipment is required to provide valid test results.

3.0 Purchase

3.1 The need for a piece of equipment may be identified by any person in the test lab. Approval to proceed with the purchase must be given by a senior Professional. Such a decision must be made with regard to the appropriate budget.

3.2 To facilitate the purchase of a piece of equipment, a purchase requisition must be completed and signed by the proper authority.

3.3 All equipment shall be tagged for inventory. Such tags shall not be mutilated in any manner.

4.0 Maintenance

4.1 Maintenance may be necessary to follow the manufacturer's service schedule or to repair equipment.

4.2 The manufacturer's service schedule shall be kept up-to-date and all repairs shall be done promptly.

4.3 Appropriate purchase requisitions, for external services, or work orders, for internal services, shall be completed and signed by persons with the proper authority before maintenance is performed.

4.4 A maintenance record for all equipment shall be maintained by the Technologist in charge.

5.0 Calibration

5.1 All equipment shall be calibrated by persons qualified to do so.

5.2 All equipment shall be calibrated according to the attached schedule in Appendix III.

5.3 A record of the calibration shall be maintained by the Technologist responsible for calibrating the equipment.

6.0 Training

6.1 All new staff shall be trained on equipment before such staff are allowed to operate equipment independent of trained staff.

6.2 Training shall be provided by the Test Laboratory and, in particular, by a staff member who has been properly trained himself and who has suitable experience with the equipment.

6.3 All persons shall be trained on new equipment by the manufacturer where the complexity of the equipment calls for it. Training on simple new equipment shall consist of a thorough reading of the instructions and a trial run.

Appendix 4.15

Detailed Steps to Certification

DETAILED STEPS TO CERTIFICATION

I. PRELIMINARY

1. A letter is received stating that a company wishes to be certified to use the Forestry Products Laboratory logo or certification mark on its products.

2. A preliminary company file is opened.

3. A complete information package outlining certification requirements is sent to the company. The package would normally include the following documents:

   a. General information relating to the Forest Products Laboratory certification program and the services it supplies to its clients.

   b. A detailed outline of the company's responsibilities.

   c. An application form.

   d. A sample fee structure.

   e. Detailed policy of the use of the certification mark.

   f. A sample form of the legal agreement.

4. If the company is willing to proceed, it will be requested to submit a formal application. (The certification organization is willing to assist the company in filling out the application.)

5. The application must be accompanied by the administration fee.

6. The application is reviewed by the certification organization.

7. If acceptable the company is notified. If rejected the application is returned stating the reasons for the rejection. In this latter case, the company is also notified of the appeal process.

II STEPS TO BE TAKEN AFTER THE APPLICATION IS ACCEPTED

1. A permanent file is established.

2. Arrangements are made to make an initial assessment of the facilities.

3. The assessment findings are reviewed and discussed with the company.

4. A legal agreement is signed.

5. A fee structure for all services rendered is established.

6. The plant is issued a certification stamp/labels.

7. The plant can now use the certification mark on its products. It must follow the approved quality control and marking procedures.

8. Ongoing audit/inspections are made in accordance with established procedures, including sample testing.

9. If numerous product deficiencies are found or conditions of the agreement are violated, then the delisting process is initiated.

Appendix 4.16

Application for Certification Form

APPLICATION FOR CERTIFICATION

NAME OF COMPANY: _____

MAILING ADDRESS FOR
ACCOUNTS AND CORRESPONDENCE: _____

_____

TELEPHONE NO.: _____

FAX NO.: _____

ADDRESS OF PLANT
TO BE CERTIFIED: _____

_____

PLANT TELEPHONE NO.: _____

NAME AND TITLE OF
CHIEF EXECUTIVE OFFICER: _____

TELEPHONE NO.: _____

FAX NO.: _____

NAME AND TITLE OF
PLANT MANAGER _____

TELEPHONE NO.: _____

FAX NO.: _____

NAME AND TITLE OF
QUALITY CONTROL MANAGER: _____

TELEPHONE NO.: _____

SIGNATURE: _____ DATE: _____
(COMPANY AUTHORIZED REPRESENTATIVE)

* Note all administration correspondence will be sent to the company authorized representatives. All quality assurance data will be sent to the Quality Control Manager unless otherwise specified by the company.

I General Information

a) Name of the product(s) for which certification is requested.

_____

_____

(b) Name(s) of the standard(s) to which products are to be certified.

_____

_____

(c) Are the standards readily available?

_____

II Organization

(a) Provide a management organizational chart, (include names and titles). (attach as annex 1)

(b) Provide resumes and a brief outline of the responsibilities for management positions. (attach as annex 2)

(c) Provide name(s) and title(s) of company representative(s) who have authority to resolve problems identified during the inspection process.

_____

_____

_____

(d) Provide names and titles of staff involved in the quality control process. (attach as annex 3)

(e) Provide resumes and brief outline of responsibilities for quality control staff. (attach as annex)

III Quality Control Program

(a) Provide a copy of the quality control manual. (attach as annex 5)

(b) Provide a flow chart showing the quality control reporting channels. (attach as annex 6)

(c) Provide a copy of the inspection plan. (attach as annex 7)

IV Product Testing Facilities (In-house Laboratory)

(a) List names and provide resumes of laboratory staff. (attach as annex 8)

(b) State the size and location of the testing laboratory._____

_____

_____

(c) Provide a list of testing equipment used in the laboratory. (attach as annex 9)

(d) Describe the program used for calibrating testing equipment. (attach as annex 10)

(e) Supply a sample of a written test procedure used in the testing process. (attach as annex 11)

(f) Are the applicable standards and test procedures readily available? Explain policy of keeping the company's technical library up-to-date. (attach as annex 12)

(g) Describe the methods and frequency of taking samples for testing purposes. (attach as annex 13)

V Use of Outside Laboratories

(a) How are laboratories selected? Describe the procedure. (attach as annex 14)

(b) How are selected laboratories monitored for staff qualifications; testing accuracy; record and test results storage; and security of confidential information? (attach as annex 15)

(c) Who selects the samples for testing purposes? _____

_____

VI Production Process

(a) List all major equipment used in the production process. (attach as annex 16)

(b) Provide details of inventory ontrol storage and dispensing methods used for glues and resins. (attach as annex 17)

(c) Provide a list of all measurement equipment used in the production process. (attach as annex 18)

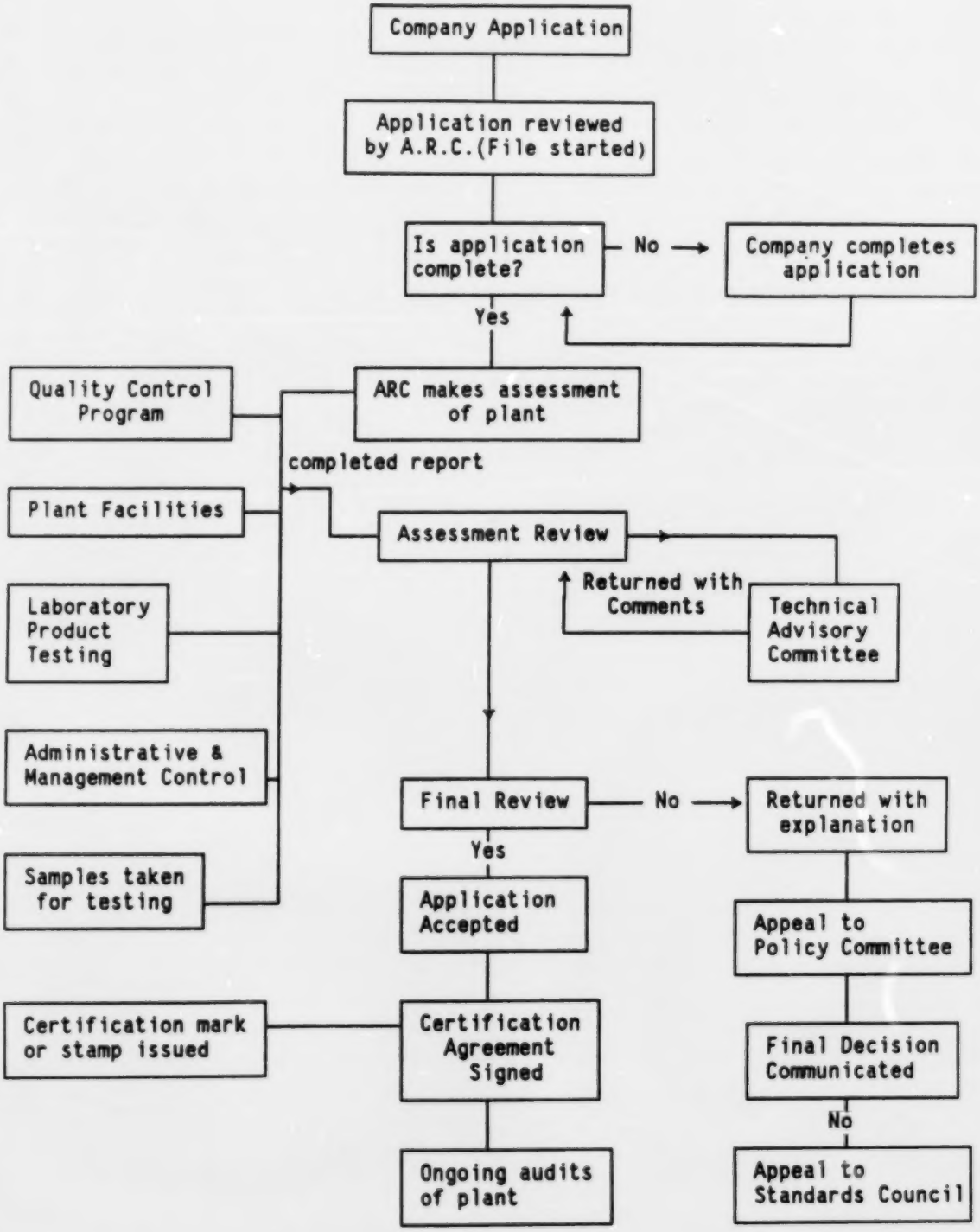
(d) Provide the procedures used for marking and de-marking the manufactured products. (attach as annex 19)

(e) Provide brief procedures used to identify and dispose of nonconforming products. (attach as annex 20)

Appendix 4.17

Flow Chart for Certification Application

FLOW CHART FOR CERTIFICATION APPLICATION



Appendix 4.18

Initial Plant Evaluation Form

INITIAL PLANT EVALUATION FORM

NAME OF PLANT: _____

ADDRESS: _____

CONTACT NAME: _____

TELEPHONE NUMBER: _____

FAX NUMBER: _____

NAME OF GENERAL MANAGER: _____

TELEPHONE NUMBER: _____

PRODUCT MANUFACTURED: _____

INSPECTION DATE: _____

NAME OF INSPECTOR: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

INSPECTORS SIGNATURE: _____

REVIEWED BY: _____

DATE: _____

1. Organization

a) Provide names and titles of staff involved in the quality control program, and provide a very brief outline of their responsibilities.

_____

_____

_____

_____

b) Provide name and title of company representative who has the authority to resolve inspection problems found during the evaluation process.

_____

_____

_____

c) Provide brief outline re staff training for the maintenance of quality control program.

_____

_____

_____

2. Quality Control Program

(a) Does the plant have an adequate control program including an inspection plan?_____

(b) Is the quality control manual readily available to staff responsible for enforcing the program? _____

(c) If the answer is no, then state where it is located and who has access to it.

_____

_____

(d) Is the quality control manual up-to-date?

_____

(e) Provide the name and title of the person responsible for updating the manual.

_____

(f) Attach a copy of the manual to the evaluation report.

3. Testing Facilities and Equipment

(a) Is a laboratory area provided for testing purposes?

_____

State approximate size and location.

_____

_____

(b) Is the laboratory located in a controlled area?

_____

Are the test records secured and only available to authorized staff?

_____

(c) List the major pieces of equipment available for testing purposes.

_____

_____

_____

_____

_____

(d) Identify equipment which uses calibration; show calibration schedules; review calibration records and identify standards to which equipment is calibrated.

(e) Attach copies of records of at least two pieces of equipment that have been calibrated.

(f) Are copies of testing standards and methods and procedures readily available?

(g) Describe methods and frequency of taking samples for testing purposes from the production runs.

Appendix 4.19

Prescribed Standards for Use of the Certification Mark

Prescribed Standards for Use of the Certification Mark

In this document the word Laboratory shall mean the Forest Products Laboratory.

The legal agreement made between the applicant and the Laboratory establishes the framework for using the certification mark. The agreement under section (f) states that the client will "use the mark # meeting the prescribed standards" which are:

(a) All certification stamps/labels are the property of the Laboratory until applied to the product.

(b) Certification stamps/labels can only be obtained from the Laboratory.

(c) Worn out stamps must be returned to the Laboratory.

(d) Stolen stamps must be reported to the Laboratory as lost or stolen.

(e) Damaged labels must be returned to the Laboratory. Where this is not possible, a detailed explanatory report must be provided.

(f) Stamps and labels shall be available for examination by an authorized representative of the Laboratory.

(g) Labels and stamps markings shall be placed in the general same area on all products.

(h) Stamp marks must be legible and easily identifiable. The ink must withstand weathering conditions to the extent that the mark will still be legible at time of construction.

(i) Non-conforming panels which bear a certification mark must be stamped with a de-certification mark meaning "non-conforming - all other marks void ". The void stamp shall be legible and easy to identify. The marking ink shall possess the same properties as the ink used for the certification stamp.

(j) The client shall abide by the details provided in the marking requirements sheet provided to each mill which instructs the client as to the color of the ink used for marking; the location of the certification mark on the products; the location of the void mark and other marking details.

(k) The Laboratory will accept the inks and inking systems approved by the American Plywood Association.

(l) The Laboratory will maintain a list of the number and type of stamps issued to each mill.

Appendix 4.20

Accredited Plant Inspection Form

ACCREDITED PLANT INSPECTION FORM

NAME OF PLANT: _____

ADDRESS: _____

COMPANY REPRESENTATIVE: _____

TELEPHONE NO: _____

FAX NO: _____

PRODUCT MANUFACTURED: _____

REQUIRED STANDARDS: _____

INSPECTOR'S SIGNATURE: _____ DATE: _____

COMPANY REPRESENTATIVE'S SIGNATURE _____

CHANGES SINCE LAST VISIT : _____
If answer is yes, explain on a separate sheet.

MANAGEMENT

1. ORGANIZATIONAL CHANGES YES _____ NO _____
2. SENIOR MANAGEMENT YES _____ NO _____

QUALITY CONTROL PROGRAM

1. QUALITY CONTROL STAFF YES _____ NO _____
2. QUALITY CONTROL STAFF TRAINING YES _____ NO _____
3. QUALITY CONTROL MANUAL YES _____ NO _____

4. IS QUALITY CONTROL READILY AVAILABLE? YES _____ NO _____

5. IS QUALITY CONTROL MANUAL UP TO DATE? YES _____ NO _____

6. DATE OF LATEST COPY _____

7. HAS THE MILL INSPECTION PLAN CHANGED? YES _____ NO _____

8. ARE PRODUCT MILL SPECIFICATIONS UP TO DATE? YES _____ NO _____

9. ARE COMPANY RECORDS, AS SPECIFIED BY THE CERTIFICATION ORGANIZATION UP TO DATE? YES _____ NO _____

LABORATORY (IN HOUSE)

1. NEW STAFF YES _____ NO _____

2. NEW LOCATION YES _____ NO _____

3. NEW EQUIPMENT YES _____ NO _____

4. RECORD SECURITY ADEQUATE YES _____ NO _____

5. CALIBRATION PROCEDURES FOLLOWED YES _____ NO _____

6. WRITTEN TEST PROCEDURES AVAILABLE YES _____ NO _____

7. STANDARDS AVAILABLE YES _____ NO _____

8. SAMPLE SELECTION PROCEDURE FOLLOWED YES _____ NO _____

9. SAMPLES STORED PROPERLY YES _____ NO _____

10. EQUIPMENT MAINTAINED YES _____ NO _____

CONTRACT LABORATORIES

1. NUMBER OF LABORATORIES UNDER CONTRACT _____

2. DATE OF LATEST EVALUATION _____

3. NAMES AND ADDRESSES OF CONTRACT LABORATORIES - (attach list to inspection report)

FACILITIES

1.	PLANT EXPANSION	YES _____	NO _____
2.	PLANT REDUCTION	YES _____	NO _____
3.	MAJOR MODIFICATIONS	YES _____	NO _____
4.	NEW EQUIPMENT	YES _____	NO _____
5.	ADEQUATE STORAGE OF GLUES AND RESINS	YES _____	NO _____
6.	PROPER INVENTORY CONTROL OF GLUES AND RESINS	YES _____	NO _____
7.	ADEQUATE DISPENSING METHODS FOR GLASS AND RESINS	YES _____	NO _____
8.	HAVE APPLICATION METHODS OF GLUES AND RESINS CHANGED?	YES _____	NO _____

MARKING OF CERTIFIED PRODUCTS

1.	ARE STAMPS/LABELS CONTROLLED AND USED IN CONFORMANCE WITH SIGNED AGREEMENTS?	YES _____	NO _____
2.	ARE MARKINGS READILY IDENTIFIABLE?	YES _____	NO _____
3.	IS MARKING DURABILITY MONITORED?	YES _____	NO _____
4.	ARE WORN OUT STAMPS, UNUSED LABELS OR DEFECTIVE LABELS RETURNED TO THE LICENSING AGENCY?	YES _____	NO _____
5.	IS STAMP/LABEL SECURITY ADEQUATE?	YES _____	NO _____

6. HAVE PREVIOUSLY CERTIFIED MARKED PANELS BEEN PROPERLY DEGRADED IF FUND DEFICIENT? (see CAN-CSA-0325.088 Clause 8.5) YES _____ NO _____

7. ARE CONFORMING AND NON CONFORMING PRODUCTS PROPERLY SEPARATED IN THE STORAGE AREA? YES _____ NO _____

8. ARE PROCEDURES FOR DISPOSING OF NON CONFORMING MATERIAL FOLLOWED? YES _____ NO _____

9. ARE PROCEDURES FOLLOWED FOR PANEL/STAMP MATCHING TO MILL SPECIFICATIONS? YES _____ NO _____

GENERAL

1. HAVE PREVIOUSLY IDENTIFIED DEFICIENCIES BEEN CORRECTED? YES _____ NO _____
(Deficiencies not corrected must be noted for follow up action)

2. ARE STAFF RESPONSIBLE FOR THE CERTIFICATION PROGRAM INFORMED WHEN PROCEDURAL CHANGES TAKE PLACE? YES _____ NO _____

Appendix 4.21

Procedures for Monitoring the Certification Program

PROCEDURES FOR MONITORING THE CERTIFICATION PROGRAM

Criterion (b) requires that the organization shall have a well developed and acceptable procedure for "monitoring certification programs for continuing compliance with applicable standards or other recognized documents".

(a) The certification licensing agreement specifies the terms, conditions and undertakings which authorizes the company to use the certification mark on its products. The agreement authorizes ARC-FD to monitor the operation for compliance of manufactures products to specified standards.

(b) Regular inspections of the plant and facilities and sample testing of the product will be carried out on an ongoing basis. Inspections will be made every 5 weeks or more often if required. Visits will be unannounced.

(c) Observations of the certification program and product deficiencies will be brought in writing to the attention of senior management.

(d) The inspection report will indicate the type and extent of product deficiencies. It will also specify the length of time the company has to correct these deficiencies. This report can be considered as the initial warning in the process of withdrawing the certification mark.

(e) The inspector may decide to withdraw the use of the certification mark immediately, if the product deficiencies are serious enough. This action will remain in force until corrective action has been taken. A written report will follow confirming the action taken by the inspector and stating the reason for it.

(f) Indications of increased product failures will also increase the number of site inspections at the participants expense.

(g) The company must have in place an acceptable procedure for product recall. The records will be checked each site visit to verify that proper recall procedures have been followed.

(h) The company is required to notify the licensing agent of any changes in the manufacturing process; change in resins; changes in senior management. Special inspections may be conducted when such changes take place to determine that product quality remains unchanged.

DELISTING

Delisting may take place if the following conditions exist in whole or part:

(a) The company fails to live up to the conditions of the licensing agreement.

(b) The licensing agreement is terminated by either party.

(c) The company fails to take action to correct identified deficiencies.

(d) The company has misused the certification mark.

Delisting shall only be carried out by senior members of the ARC-FD. Prior to delisting there shall be dialogue with senior company management. A written warning shall be issued allowing time for the company to respond.

REINSTATEMENTS

Delisted companies may reapply for certification, however the same rules and conditions shall apply as if they were new clients.

Appendix 4.22

Certification Listing and Licensing Agreement

Certification Listing and Licensing Agreement

Agency:

The Alberta Research Council, Forestry Division, located at:

_____

_____

Client:

_____
(Name of Company)

_____
(Address of Company)

_____
(Name of Mill)

_____
(Location of Mill)

_____
(Name of General Manager)

_____
(Address and Telephone Number)

_____
(Name of Product to be Certified)

_____
(Applicable Standard)

Undertakings

The Alberta Research Council, Forestry Division Agrees:

a) To receive, record and review the application in accordance with established procedures.

b) To carry out an initial inspection of the manufacturing plant (the mill) to assess the plants' capabilities to manufacture the product to established standards.

c) To review the plants quality control procedures, equipment listing and administrative capability to ensure continuous surveillance of the manufactured product.

d) To perform laboratory testing of samples in accordance with applicable standards and methods. Samples shall be taken at random from different production runs.

e) To respect the confidentiality of inspection and testing results. The information shall not be released without the written consent of the client.

The Client Agrees:

a) To provide the ARC-FD representative with all the applicable information and assistance during the initial assessment.

Once Accredited, The Client Further Agrees:

b) To ensure that senior management is familiar with the requirements of the certification program.

c) To allow the ARC-FD inspector access to the premises at reasonable hours in order to audit the manufacturing and quality control process; inspect the production records; and take product samples for testing purposes to verify that the product meets the requirements of the applicable standards.

d) To ensure that the mill will have available at all times, during the manufacturing process an updated quality control manual.

e) To inform the licensing agent immediately of any major changes in the establishment. This shall include changes or vacancies in senior management positions; changes in the manufacturing process; addition of new manufacturing equipment; as well as any major changes made to the quality control manual.

f) That the certification mark/stamp will only be applied on site to products produced at the mill and meeting the prescribed standards.

g) That the company will have a method of dealing with non-conforming material to ensure that is will not reach the market place as a certified product.

h) To correct any deviation or variation from the standard found in the process or product, by the inspector. Failure by the company to correct the problem will result in the withdrawal of the certification mark/stamp until corrective action has been taken.

i) To provide and maintain the equipment required for in plant testing.

j) That the laboratory is free to exchange data and information with the other C.O. if the mill is operating a parallel certification program with another certification organization.

Payment of Fees

The company agrees to promptly pay the established fees for certification services rendered during the term of this agreement.

Legal Liability

The company agrees to except the licensing agency and its employees from any judgement incurred because of the failure or use of a certified product. The company further agrees that it will not sue the licensing agency for loss of profit as a result of using the certification mark.

Recognition of Certification Mark.

The licensing agency does not guarantee that regulatory authorities or bodies having jurisdiction will recognize or accept the certification mark on products used within its jurisdiction. Representation to the authorities to accept the certification mark is the responsibility of the client.

Agreement re Termination

a) The agreement may be terminated by the licensing agency if the company fails to comply with the terms and conditions of this agreement.

b) The agreement may be terminated by the client upon two months written notice.

c) If the agreement is terminated the company agrees to return all certification marks or stamps and any certification certificates held in its possession.

Amendments

This agreement can be amended provided the amendments do not alter the contents of the rest of the agreement. Then amendments must be signed by an authorized representative of each of the parties.

Interpretation

The agreement will be interpreted in accordance with the laws in force in the province of Alberta.

Coming into Force

This agreement shall come into force on the _____ day of the month of _____ in the year of _____ .

Witnesses to the Agreement.

_____

_____

_____

Appendix 4.23

Complaints and Appeals Procedures

COMPLAINTS AND APPEALS PROCEDURES

General Considerations

1. Only complaints related directly to the certification program shall be dealt with under this procedure.

2. Clients shall be informed of the appeal procedure available to them.

3. All formal complaints, together with arguments and other evidence, shall be submitted in writing to the licensing agency.

4. All complaints or appeals shall be acknowledged in writing and shall be recorded on the company files, together with other related correspondence.

5. All decisions shall be communicated in writing to the appellant. Copies shall be filed and made available only to authorized personnel.

6. Complaints and appeals of a technical nature will be dealt with by staff technically competent in that field of operation. The technical advisory committee shall be informed of any major issues.

7. Complaints or appeals relating to certification will be dealt with by management responsible for the certification program.

8. An applicant or participant in the certification program may appeal any decision made by the technical staff, or first line management administering the certification program.

First Level Appeal

1. The appellant shall submit all documents and evidence in writing to the senior manager.

2. The senior manager will request a complete report from staff on matters relating to the complaint. The manager will make a decision, usually in consultation with staff who dealt with the initial complaint or appeal. The appellant shall be informed of the decision.

Second Level Appeal

1. If the appellant is not satisfied with the first level decisions, a second level appeal may be requested. Technical matters shall be referred to the chairperson of the Technical Advisory Committee. Matters dealing with certification shall be referred to the chairperson of the Policy Board. This would include rejection of an application and delisting appeals.

2. The chairpersons shall be supplied with all previously recorded information, plus any other reports relevant to the issue.

3. The chairperson may decide to call a meeting of the committee prior to finalizing the decision, or opinions may be solicited by letters or telephone.

4. All correspondence shall be channelled through the manager responsible for the certification program. Decisions shall be communicated in writing to the appellant within a reasonable time.

Third Level Appeal

1. The appellant has the option of making a final appeal to the Standards council of Canada. The appeal with all information must be sent to the Standards Council of Canada, 350 Sparks Street, Suite 1200, Ottawa, Ontario, K1P 6N7.

2. The Alberta Research Council Forestry Department should be notified by the appellant that it is appealing the decision to the Standards Council.

3. The decision of the Standards Council is binding on both parties.

Appendix 4.24

Sample Copy of R&D Newsletter

Appendix B

SCC Scope of Accreditation

Alberta Research Council
FOREST PRODUCTS LABORATORY
P.O. Box 8330, Postal Station F/250 Karl Clark Road
EDMONTON, Alberta
T6H 5X2

CONTACT: Mr. Robert Wellwood TEL: (403) 450-5111

CLIENTS SERVED: All interested parties

FIELD OF TESTING: Mechanical

SCOPE OF ACCREDITATION

4.0CONSTRUCTIONS AND RELATED MATERIALS

4.2Fasteners and Hardware

Fasteners, Mechanical, in Wood
Capacity, Joist Hangers-
Load, Vertical: ASTM D1761 44.1
Moment, Torsional: ASTM D1761 44.2
Resistance-
Movement, Lateral, Nails, Screws or Staples: ASTM D1761 12-18
Withdrawal, Nails and Staples: ASTM D1761 8.1
Withdrawal, Screws: ASTM D1761 8.2

5.0 ELASTOMERS AND PROTECTIVE COATINGS

5.1 Adhesives and Sealants:

Adhesives

Plywood Bonding
Strength, Shear, Tension: ASTM D906

12.0 TEXTILES AND FIBROUS MATERIALS

12.2 Wooden and Wood-Based Products

Generally Applicable Tests

Moisture Content-
Distillation: ASTM D2016 C 12-16
Moisture Meter, Electronic: ASTM D2016
B 8-11
Oven-Drying: ASTM D2016 A 4-7
Specific Gravity-
Flotation Tube: ASTM D2395 12
Volume, Measurement: ASTM D2395 6
Volume, Water Immersion: ASTM D2395 9

Lumber

Timber, Small Clear Specimens
Hardness: ASTM D143 85-89
Moisture Content: ASTM D143 124-127
Resistance, Withdrawal, Nails: ASTM D143 110-115
Shrinkage, Radial and Tangential: ASTM D143 118-123
Specific Gravity and Shrinkage in Volume: ASTM D143 116 and 117
Strength-
Compression, Parallel to Grain: ASTM D143 55-62
Static Bending: ASTM D143 47-54
Timber, Structural, Glued-Laminated
Modulus of Elasticity: CSA 0122 6.5; CSA 0177 8.5

Strength-
Bending and Tension, Joints: CSA 0122 6.4; CSA 0177 8.4
Block Shear: CSA 0122 6.2; CSA 0177 8.2
Glue Joint, Vacumm Pressure Cycles: CSA 0122 6.3; CSA 0177 8.3
Timber in Structural Sizes
Flexural Properties: ASTM D198 4-11

Panel Products (except Plywood)

Generally Applicable Tests
Density: APA P-8
Flexural Properties-
Center-Point Flexure, Small Specimens: ASTM D3043 A5
Pure Moment Test, Large Specimens: ASTM D3043 C7
Moisture Content: APA P-6
Resistance, Bending-
Panels: APA S-5
Small Specimens: APA S-6
Strength-
Internal Bond: APA S-7
Shear, Rolling: ASTM D2718
Shear, Two Rail: ASTM D2719 C7
Thickness, Panel: APA P-7
Particle Boards and Waferboard, Mat-Formed
Density and Moisture Content: CSA 0188.0-M 6.5
Dimensions: CSA 0188.0-M 6.1
Expansion, Linear-
50 to 90 % RH, Interior-Bond Boards: CSA 0188.0-M 6.10
Oven dry to Soak, Exterior-Bond Boards: CSA 0188.0-M 6.13
Hardness, Janka Ball: CSA 0188.0-M 6.8
Moduli of Elasticity and Rupture: CSA 0188.0-M 6.6
Resistance, Withdrawal-
Nail: CSA 0188.0-M 6.11
Screw: CSA 0188.0-M 6.9
Squarness: CSA 0188.0-M 6.3
Straightness: CSA 0188.0-M 6.4

- Strength-
  - Bending, 2-Hour Boil: CSA 0188.0-M 6.12
  - Internal Bond: CSA 0188.0-M 6.7
- Thickness: CSA 0188.0-M 6.2

Roof Deck, Structural Insulating
- Deflection and Strength, Equivalent Uniform Load: ASTM D2164 8-12
- Resistance-
  - Aging, Cyclic Exposure: ASTM D2164 25-29
  - Load, Concentrated: ASTM D2164 13-16
  - Load, Impact: ASTM D2164 21-24
  - Load, Sustained, Uniform: ASTM D2164 17-20

Sheathing, Floor and Roof
- Resistance, Load-
  - Impact: APA S-1; ASTM E661 7.5-7.7, 8.2, 8.3
  - Static, Concentrated: APA S-1; ASTM E661 7.1-7.4, 8.1
  - Uniform: APA S-2; ASTM E72 11, 12, 17

Strandboard and Waferboard
- Density: CAN3-0437.1-M 5.15
- Expansion, Linear-
  - 50 to 90 % RH: CAN3-0437.1-M 5.11
  - Oven-dry to Saturated: CAN3-0437.1-M 5.12
- Hardness, Janka Ball: CAN3-0437.1-M 5.16
- Moduli of Elasticity and Rupture: CAN3-0437.1-M 5.7
- Modulus of Elasticity, 6 Conditioning Cycles: CAN3-0437.1-M 5.17
- Modulus of Rupture-
  - 6 Conditioning Cycles: CAN3-0437.1-M 5.10
  - 2-Hour Boil: CAN3-0437.1-M 5.9
- Moisture Content: CAN3-0437.1-M 5.1
- Resistance-
  - Load, Impact, Concentrated: APA S-1; ASTM E661 7.5-7.7
  - Load, Static, Concentrated: APA S-1; ASTM E661 7.1-7.4; ASTM E72 13
  - Load, Uniform: APA S-2; ASTM E72 11, 12 and 17
  - Pull-Through Nail Heads: CAN3-0437.1-M 5.19
  - Swell, Thickness: CAN3-0437.1-M 5.11
  - Withdrawal, Lateral, Nails: CAN3-0437.1-M 5.14

Withdrawal, Nail: CAN3-0437.1-M 5.1
Strength-
Bending, Static, Large Specimens: ASTM D3043 C7
Internal Bond: CAN3-0437.1-M 5.8
Shear, Rolling: ASTM D2718
Shear, Two Rail: ASTM D2719 C7
Tolerances, Dimensional-
Length: CAN3-0437.1-M 5.2
Squareness: CAN3-0437.1-M 5.4
Straightness: CAN3-0437.1-M 5.5
Thickness: CAN3-0437.1-M 5.6
Width: CAN3-0437.1-M 5.3

Wood-Base Fiber and Particle Panel Materials
Absorption, Water and Thickness Swelling: ASTM D1037 100-106
Cupping and Twisting: ASTM D1037 125
Dimensions, Finished Boards: ASTM D1037 7
Hardness: ASTM D1037 68-73
Moisture Content, Density and Specific Gravity: ASTM D1037 126, 127
Resistance-
Aging, Accelerated: ASTM D1037 118-124
Movement, Lateral, Nails: ASTM D1037 41-46
Pull-Through, Nail Heads: ASTM D1037 54-60
Withdrawal, Direct, Screws: ASTM D1037 61-67
Withdrawal, Nail: ASTM D1037 47-53
Strength-
Bending, Static: ASTM D1037 11-20
Compression, Parallel to Surface: ASTM D1037 34-40
Shear, Interlaminar: ASTM D1037 128-135
Tensile, Parallel to Surface: ASTM D1037 21-27
Tensile, Perpendicular to Surface: ASTM D1037 28-33
Swelling, Edge, Disk: ASTM D1037 111-117
Variation, Linear, Change in Moisture Content: ASTM D1037 107-110
Variation, Thickness: ASTM D1037 8

Plywood

Generally Applicable Tests
- Density: APA P-8
- Flexural Properties-
  - Center-Point Flexure, Small Specimens: ASTM D3043 A5
  - Pure Moment Test, Large Specimens: ASTM D3043 C7
- Moisture Content: APA P-6
- Resistance, Bending-
  - Panels: APA S-5
  - Small Specimens: APA S-6
- Strength-
  - Internal Bond: APA S-7
  - Shear, Rolling: ASTM D2718
  - Shear, Two Rail: ASTM D2719 C7
- Thickness, Panel: APA P-7

Hardwood and Decorative
- Dimensions: CSA 0115-M 3.4
- Strength, Bond: CSA 0115-M 6

Hardwood (Poplar)
- Durability, Heat, Exterior Grades: CSA 0153-M 5.1.5.3
- Strength-
  - Bond, Interior Grades: CSA 0153-M 5.2
  - Overlay Bond, Exterior Grades: CSA 0153-M 5.1.4.3, 5.1.5.2
  - Shear, Exterior Grades: CSA 0153-M 5.1.4.3, 5.1.5.1
  - Tensile, Stress Joints: CSA 0153-M 5.3
- Thickness, Ply: CSA 0153-M 4.3
- Tolerances, Manufacturing: CSA 0153-M 4.4

Sheathing, Floor and Roof
- Resistance, Load-
- Impact: APA S-1; ASTM E661 7.5-7.7, 8.2, 8.3
- Static, Concentrated: APA S-1; ASTM E661 7.1-7.4, 8.1
- Uniform: APA S-2; ASTM E72 11, 12, 17

Softwood
- Durability, Heat: CSA 0121-M 5.1.4.3; CSA 0151-M 5.1.4.3
- Strength-
  - Overlay Bond: CSA 0121-M 5.1.3.3, 5.1.4.2; CSA 0151-M 5.1.3.3, 5.1.4.2
  - Shear: CSA 0121-M 5.1.3.3, 5.1.4.1; CSA 0151-M 5.1.3.3, 5.1.4.1
  - Tensile, Stress Joints: CSA 0121-M 5.2; CSA 0151-M 5.2

Thickness, Ply: CSA 0121-M 4.3; CSA 0151-M 4.3

Tolerances, Manufacturing: CSA 0121-M 4.4; CSA 0151-M 4.4

Prefabricated Components

Floor Framing Systems
- Resistance to Load: CMHC Technical Report 8304

Floors and Roofs, Flat
- Resistance to Load, Static, Uniform or Concentrated Application: ASTM E196

Generally Applicable Tests

Strength and Rigidity, Joints-
- Bolted: ASTM D1761 24.2, 24.4, 26
- Metal Timber Connectors: ASTM D1761 24.3, 24.4, 26

Panels for Building Construction
- Resistance, Concentrated Loads-
  - Floors: ASTM E72 18
  - Roofs: ASTM E72 21
  - Walls: ASTM E72 13
- Resistance, Impact Loads, Floors, Roofs and Walls: ASTM E661 7.5-7.7, 8.2, 8.3; ASTM E695 8.3

Trusses
- Strength, Shear, Truss Plates: CSA S347-M 6.3c

Appendix C

European Standards
Sample Progress Report

EUROPEAN STANDARDS ON TIMBER - PROGRESS REPORT APRIL 1989

BACKGROUND

CEN is the European Standards Organisation and comprises 18 Countries; the 12 Common Market Countries plus the 6 EFTA Countries (Austria, Finland, Iceland, Norway, Sweden and Switzerland).

As part of the '1992 Harmonisation' the EEC has asked CEN to draft Standards which will support the Construction Products Directive. The main objective of the Construction Products Directive is to eliminate barriers to trade caused by national rules and regulations while at the same time maintaining acceptable levels of health and safety. It applies to the Construction industry in the EEC.

In addition CEN can develop its own programme of work to achieve greater standardisation. When the EEC wishes to have work carried out by CEN on its behalf it issues 'mandates' and eventually pays some of the costs.

Using CEN in this way gives the EFTA countries certain advantages compared with other countries outside CEN which supply timber to Europe.

With regard to harmonisation in timber 4 main CEN Committees have begun work and a fifth is about to start.

These are:

CEN TC 38 - WOOD PRESERVATION
CEN TC 103 - TIMBER ADHESIVES
CEN TC 112 - WOOD BASED PANELS
CEN TC 124 - TIMBER STRUCTURES

The fifth Technical Committee is:

CEN TC 175 - SAWN TIMBER AND SAWLOGS

The organisation, work programme and details of progress of the 5 Committees follows:

CEN TC 38 - WOOD PRESERVATION

CEN TC 38 is the European Standards Committee responsible for drafting Standards on Wood Preservation. It has a French Convenor and Secretariat.

At its first meeting in April 1988, the TC created four working groups. These were directly related to the new task taken on which was to provide standards for the specification and levels of treatment of wood preservatives. At its second meeting in October TC-38 created six more working groups all of which relate to its original remit - methods of test. The ten working groups now set up are:

WG	Title	Convenor
1	Hazard classes	France
2	Natural durability	Germany
3	Performance of treated wood	Sweden
4	Performance of preservatives	UK
5	Field of testing out of ground contact	UK
6	Hylotrupes tests	Switzerland
7	Particleboard and plywood	Germany
8	Soft rot tests	Germany
9	Preventive efficacy	France
10	Lyctus tests	France

a. <u>WG-1 Hazard Classes</u>

This group (convenor M. Demange - France) has virtually completed its task which is essentially to define an agreed table of hazard classes.

These are:

1.	above ground dry	insects only
2.	above ground covered (risk of wetting)	decay and insects
3.	above ground not covered	decay and insects
4.	in contact with ground or fresh water	decay and insects
5.	in salt water	marine borers

France has been insistent that insects are an ever present hazard in classes 1-4 but other countries (including UK) would like to see these separated. The issue will need to be taken up at the plenary meeting.

b. <u>WG-2 Natural Durability of Wood</u>

WG-2 (convenor H Willietner - Germany) is proposing to produce a standard on natural durability in two parts.

Part 1 - Principles of testing and classification of the natural durability of wood.

Part 2 - Natural durability of selected wood species of importance in Europe.

Due to differences in performance it will be necessary to consider natural durability of wood under four headings.

- decay
- wood boring insects
- termites
- marine borers

Once a classification is achieved the levels of performance will be related to the hazard classes. There is a division of opinion on the number of wood species to be included in Part 2 and currently a figure of 70-100 is envisaged.

c. WG-3 Performance of Treated Wood

Having made a false start this WG (convenor J Jermer - Sweden) is least advanced of the four and it is difficult to see how it will meet its deadline.

In general it is moving towards classifying timbers for treatment into two groups - permeable and resistant and to specifying two levels of treatment - superficial and pressure processes. The majority of countries were in favour of a results type specification despite the difficulty of laying down workable criteria for specifying the treated wood.

d. WG-4 Performance of Preservative

The task of this WG (convenor A Bravery - UK) is to define the test protocols needed to evaluate the suitablity of a perservative for use in each of the hazard classes. One aspect of this is to define levels of performance required by preservatives in test. Considerable progress has been made in constructing a table of requirements and the details are under consideration. However, the detailed content of the table is subject to further debate. The present approach reflects the continental predisposition to formulation testing, and approval, although it is envisaged that long established preservatives could be allowed though on a composition (active ingredient) basis.

CEN TC-38 PLENARY MEETING

The next plenary meeting is scheduled to be held in London 7-9 June 1989.

CEN TC 103 - TIMBER ADHESIVE

This was an old CEN Committee with a German Secretariat and has a responsibility for standards for non-structural adhesives.

To carry out its new task of preparing Standards for adhesives for timber structural purposes it has been reformed with a Dutch convenor (Van der Velden) and a BSI Secretary (Nowacki).

TC 103 was originally constituted at the request of the European Adhesives Manufacturers' Association (FEICA) to produce Standards for PVAC glues and called non-structural adhesives (mainly for furniture).

PR ENS 204 and 205 were drafted but not issued because of a disagreement about the rate of loading in the shear test and the shape and size of the specimens for sustained loading tests. The drafts prescribed a very high rate of loading (50mm/min) and reflected the DIN Standards in this field. Minimum failing loads from the tests were given and also reflect DIN Standards.

It appears impossible to reach a compromise with a more realistic loading rate and reduced failing loads. A reduction in testing speed with no corresponding reduction in acceptable failing load could fail products which have a history of successful use.

With regard to the creep tests it had been assumed (or hoped) that the procedures given in BS 3544 would be adopted since no other National Standard contains a creep test at present. It appears that the DIN Secretariat during the editing process changed both the geometry of the test piece and the rate of loading. This means that the historic problems encountered in CEN TC 103 on non-structural adhesives are being inherited in the new work on Structural Adhesives since a first draft on structural adhesives proposes the old shape and rate of loading for non-structural adhesives.

The new draft for structural adhesives which is limited to thermosetting materials contains the controversial creep test but includes test pieces with glue lines of differing thickness. The UK feels that the test is irrelevant to thermosetting adhesives and there is no evidence that laboratory performance of glue lines of differing thickness is linked with real life durability.

The UK feels that the Standard should contain 4 exposure categories similar to those in BS 5268 Part 2 and that these should be evaluated using the methods given in BS 1204. It is understood that CEN TC 124 WG3 Glued Laminated Timber is making a similar comment.

The first meeting of TC 103 takes place in London on 8/9 May. A previous informal meeting was held in June 1988. The UK representatives are Eddie van der Straeten and David Price.

CEN TC 112 - WOOD BASED PANELS

CEN TC 112 - Wood Based Panels is the European Standards Committee responsible for drafting standards on Wood Based Panels in support of Eurocode 5 - Timber Structures. Wood based panels will also need to satisfy the requirement regarding hygiene, health and environment with regard to formaldehyde emission. In addition, CEN TC 142 has agreed that it should also draft standards covering the totality of the 'open market' as well as those necessary for structural support.

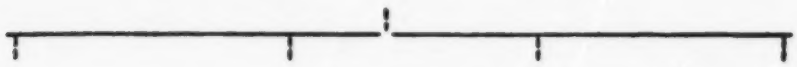
CEN TC 112 will draft supporting standards of similar nature to those drafted in BSI by TIB/ - such as BS 6566 : Plywood; BS 142 Specification for Fibre Building Boards and BS 5669 Specification for Wood Chipboard and methods of test for particleboard. Drafts are available on some of the work items listed below in Appendix I.

The organisation of CEN TC 112 is as below:

CEN TC 112 - WOOD BASED PANELS

UK REPRESENTATIVES -
EDDIE VAN DER STRAETEN, JOHN SUNLEY, ALAN TWITCHETT

GERMAN CONVENOR - NOACK



WG1 - Particleboard (German Convenor - Barghoorn)	WG2 - Plywood (French Convenor - Plange)	WG3 - Fibreboard (Italian Convenor - Gehrts)	WG4 - Co-ordination of Test Methods (UK Convenor - Sunley)

NOTE: A fifth working group has been proposed taking over the work of formaldehyde from WG4.

A centrally co-ordinated programme of work has been drawn up for wood based materials covering WG1 2 and 4. Since the work of WG3 is not part of the EEC mandates to CEN its work programme is given separately.

A second meeting of TC 112 will be held in Cologne, the UK delegates would be David Duke-Evans, Alan Twitchett and one other. John Sunley will attend as Convenor of WG4.

No.			Target date
	WG 1	Particle boards	
1	1.1	Terminology and classification of particle boards	09.89
2	1.2	Thickness swelling in water	03.90
3	1.3	Internal bond	03.90
4	1.4	Moisture resistance	*)
5	1.5	Surface soundness	03.90
6	1.6	Quality standard: Part 1 General requirements	09.89
7	1.7	Quality standard: Part 2 General purpose boards	12.90
8	1.8	Quality standard: Part 3 Boards for further processing	*)
9	1.9	Quality standard: Part 4 Load bearing boards - dry conditions	12.90
10	1.10	Quality standard: Part 5 Load bearing boards - wet conditions	06.91
11	1.11	Quality standard: Part 6 Heavy duty load - bearing boards	12.91
12	1.12	OSB boards	12.91
13	1.13	Performance standard for particle boards: Part 1 - flooring	03.92
14	1.14	Performance standard for particle boards: Part 2 - walls	03.92
15	1.15	Performance standard for particle boards: Part 3 - roofing	03.92

*) target date cannot be indicated at the time being, but only in June 1989

No.			Target date
	WG 2	Plywood	
16	2.1	Terminology and classification	12.90
17	2.2	Bonding qualities (glue line test method and glue types)	03.90
		Testing of mecanical properties with medium sized test pieces	
18	2.3	Part 1 - bending strength	06.90
19	2.4	Part 2 - compression strength	06.90
20	2.5	Part 3 - shear strength	12.90
21	2.6	Part 4 - tensile strength	12.90
22	2.7	Durability of plywood-panels - methods of assessment	12.91 **)
23	2.8	Ability for finishing	12.91
24	2.9	Dimensions and tolerances of plywood-panels	03.90
25	2.10	Quality standard: Part 1 - flooring	12.91
26	2.11	Quality standard: Part 2 - walls	12.91
27	2.12	Quality standard: Part 3 - roofing	12.91
28	2.13	Performance standard for plywood: Part 1 - flooring	03.92
29	2.14	Performance standard for plywood: Part 2 - walls	03.92
30	2.15	Performance standard for plywood; Part 3 - roofing	03.92
	WG 4	Common test methods for wood based panels	
31	4.1	Determination of moisture content	09.89
32	4.2	Determination of density	09.89
33	4.3	Determination of dimensions of panels	09.89

**) depending on the results of work of CEN/TC 38

No.			Target date
34	4.4	Determination of dimensions of test pieces	09.89
35	4.5	Determination of edge straightness and squareness of panels	09.89
36	4.6	Determination of bending strength and modulus of elasticity in bending	06.90
37	4.7	Sampling, cutting and expression of test results	06.90
38	4.8	Inspection, quality control	12.91 ***)
39	4.9	Structural test for deviation of characteristic values	12.90
40	4.10	Symbols	06.90
41	4.11	Definitions	06.90
		Performance testing	
42	4.12	Part 1 - flooring	06.91
43	4.13	Part 2 - walls	06.91
44	4.14	Part 3 - roofing	06.91
45	4.15	Determination of bending strength edgewise	09.91
46	4.16	Determination of creep	12.91
	WG 5	Formaldehyde	
47	5.1	Determination of formaldehyde content - perforator method	09.89
48	5.2	Determination of emission of formaldehyde Part 1: Walk-in-chamber reference method	12.92 ****)
49	5.3	Determination of emission of formaldehyde Part 2: Small scale emission measuring methods	*)

*) see page 1
***) depending on the results of work of CENCER
****) depending on financing of round robin test

CEN TC 112, Working Group 3: Working Programme (continued)
List of Standards Prepared

Current Number	Title of Standard	Target Date/ Status	Cooperation Required
1	Wood Fibreboards: Definition, Classification, Marking	Draft available	
2	Wood Fibreboards: Determination of Water Absorption and Thickness Swell after Immersion in Water	June 1989	WG 1/WG 4
3	Wood Fibreboards: Determination of Dimensional Movement due to Climatic Changes	Draft available	WG 1/WG 4
4	Wood Fibreboards: Determination of Transverse Internal Bond	Draft available	WG 1/WG 4
5	Wood Fibreboards: Test Method for Moisture Resistant Boards	Draft available	WG 1/WG 4
6	Wood Fibreboards: Determination of Squareness	Draft available	WG 4
7	Wood Fibreboards: Determination of Resistance to Axial Withdrawal of Screws	June 1989	
8	Wood Fibreboards: Determination of Surface Absorptiveness	Draft available	
9	Wood Fibreboards: Determination of Deflection of Softboards	June 1989	
10	Quality Requirements for Wood Fibreboards (Quality Standard)	June 1989	

CEN TC 124 - STRUCTURAL TIMBER

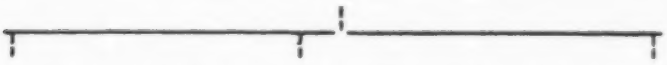
CEN TC 124 is the European Standards Committee responsible for drafting standards on solid and laminated timber in support of Eurocode 5 - Timber Structures. CEN TC 124 will draft supporting standards of a similar nature to those drafted in BSI by TIB/ - on timber sizes, stress grading, glulam products and a variety of testing standards. Drafts are available on most of the work items listed below.

The organisation of CEN TC 124 is as below:

CEN TC 124 - TIMBER STRUCTURES

UK REPRESENTATIVES - MICHAEL BAKER, JOHN SUNLEY, DAVID MORGAN

DANISH CONVENOR - LARSEN



WG1 - TEST METHODS	WG2 - SOLID TIMBER	WG3 - GLUED LAMINATED TIMBER
Irish Convenor - Torpey	Jnt French/UK Convenors - Demange/Sunley	Danish Convenor - Riberholt

Last meeting Rotterdam 27/28 October 1988 - Report available
Next meeting Lisbon 10/11 April 1989

The programme of work and target dates for CEN 124 is as below:

LIST OF STANDARDS	TARGET DATE
Test methods for timber structures and timber based components - Principles	1989-09-30
Solid timber in structural sizes and glued laminated timber - Determination of tensile, compressive and shear strengths and stiffnesses perpendicular to the grain.	1989-12-30
Glued laminated timber - Determination of physical and mechanical properties.	1989-09-30
Timber structures - Joints made with mechanical fasteners - Determination of embedding strength.	1989-09-30
Wood based panels in structural sizes - Determination of some physical and mechanical properties for	1989-09-30
structural purposes - Bending strength of nails	1989-09-30
- Racking strength and stiffness of walls	1989-12-31
Structural timber - Preferred sizes	1989-10-31
Glued laminated timber - Preferred sizes	1989-09-30
Structural timber - Strength and density classes	1989-09-30
Glued laminated timber - Strength classes	1989-12-31
Structural timber - Grading - Minimum requirements for visual grading standards and examples on grading standards.	1989-12-31
Structural timber - Determination of characteristic values.	1989-09-30
Structural timber - Principles for evaluation of machine stress grading systems and machines.	1989-12-31
Glued Laminated Timber - Production requirements.	1989-09-30
Glued Laminated Timber - Delamination tests.	1989-09-30
Glued Laminated Timber - Glueline shear test.	1989-09-30
Glued Laminated Timber - Vertically laminated timber.	1989-09-30
Glued Laminated Timber - Full cross-sectional joints.	1989-09-30

7 ISO-PQ - Standards into 3 CEN Standards*

*More can be said after the Lisbon meeting.

CEN TC 175 - SAWN TIMBER AND SAWLOGS

The CEN technical board has agreed to create a new technical committee CEN TC 175 with a provisional title 'Sawn Timber and Sawlogs'. The Secretariat has been allocated to France (Afnor).

The UK will propose that the Committee covers all non-structural uses of timber so that solid timber in CEN is covered by two main Committees; the other being CEN 124 - Structural Timber.

Possible subjects include Pallets, Packaging, Furniture, Fencing, Poles, Tiling battens, Joinery and Flooring.

An Ad Hoc group in the UK has met twice, once with the French Secretariat, to formulate the UK's views which will be presented at a first meeting of TC 175 in Paris on the 20/21 June.

STANDSTILL

The decision to start work on a new Standard or series of Standards rests with the CEN Technical Board. When the Board approves a new programme it usually imposes a 'Standstill'. There is usually a 3 month period during which a Standard in the 'pipeline' for publication can go ahead.

The programmes for CEN TC 38, 112 and 124 have been formally agreed and the 'Standstill' applies with an effective operative date of mid-June 1989.

J G Sunley
3 April 1989
/ack